SANYO

FILE NO

SERVICE MANUAL

LCD TV

LCD-32E30A

PRODUCT CODE No.: 168234766
CHASSIS NO. : SSA32UT-00

LCD-42E30FA

PRODUCT CODE No.: 168234827
CHASSIS NO. : SSA42UT-00

REFERENCE No.: SM0945003-02

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Attention: This service manual is only for service personnel to take reference with. Before servicing please read the following points carefully.

1.Safety precautions

1. Instructions

Be sure to switch off the power supply before replacing or welding any components or inserting/plugging in connection wire Anti static measures to be taken (throughout the entire production process!):

a) Do not touch here and there by hand at will;
b) Be sure to use anti static electric iron;
c) It's a must for the welder to wear anti static gloves.

Please refer to the detailed list before replacing components that have special safety requirements. Do not change the specs and type at will.

2. Points for attention in servicing of LCD

2.1 Screens are different from one model to another and therefore not interchangeable. Be sure to

Use the screen of the original model for replacement.

2.2 The operation voltage of LCD screen is high voltage. Be sure to take proper measures in protecting yourself and the machine when testing the system in the course of normal operation or right after the power is switched off. Please do not touch the circuit or the metal part of the module

That is in operation mode. Relevant operation is possible only one minute after the power is switched off.

2.3 Do not use any adapter that is not identical with the TV set. Otherwise it will cause fire or damage to the set.

2.4 Never operate the set or do any installation work in bad environment such as wet bathroom, laundry, kitchen, or nearby fire source, heating equipment and devices or exposure to sunlight etc. Otherwise bad effect will result.

2.5 If any foreign substance such as water, liquid, metal slices or other matters happens to fall into the module, be sure to cut the power off immediately and do not move anything on the module lest it should cause fire or electric shock due to contact with the high voltage or short circuit.

2.6 Should there be smoke, abnormal smell or sound from the module, please shut the power off at once. Likewise, if the screen is not working after the power is on or in the course of operation, the power must be cut off immediately and no more operation is allowed under the same condition.

2.7 Do not pull out or plug in the connection wire when the module is in operation or just after the power is off because in this case relatively high voltage still remains in the capacitor of the driving circuit. Please wait at least one minute before the pulling out or plugging in the connection wire.

2.8 When operating or installing LCD please don't subject the LCD components to bending, twisting or extrusion, collision lest mishap should result.

2.9 As most of the circuitry in LCD TV set is composed of CMOS integrated circuits, it's necessary to pay attention to anti statics. Before servicing LCD TV make sure to take anti static measure and ensure full grounding for all the parts that have to be grounded.

2.10 There are lots of connection wires between parts behind the LCD screen. When servicing or moving the set please take care not to touch or scratch them. Once they are damaged the screen would be unable to work and no way to get it repaired.

If the connection wires, connections or components fixed by the thermo tropic glue need to disengage when service, please soak the thermo tropic glue into the alcohol and then pull them out in case of damage.

2.11 Special care must be taken in transporting or handling it. Exquisite shock vibration may lead to breakage of screen glass or damage to driving circuit. Therefore it must be packed in a strong case before the transportation or handling.

2.12 For the storage make sure to put it in a place where the environment can be controlled so as to prevent the temperature and humidity from exceeding the limits as specified in the manual. For prolonged storage, it is necessary to house it in an anti-moisture bag and put them altogether in one place. The ambient conditions are tabulated as follows:

Temperature	Scope for operation	5 ~+ 35 ^{o}C
	Scope for storage	0 ~+ 40^{o}C
Humidity	Scope for operation	0% ~ 90 %
	Scope for storage	0% ~ 90%

2.13 Display of a fixed picture for a long time may result in appearance of picture residue on the screen, as commonly called “ghost shadow”. The extent of the residual picture varies with the maker of LCD screen. This phenomenon doesn’t represent failure. This “ghost shadow” may remain in the picture for a period of time (several minutes). But when operating it please avoid displaying still picture in high brightness for a long time.

3. Points for attention during installation

3.1 The front panel of LCD screen is of glass. When installing it please make sure to put it in place.
3.2 For service or installation it’s necessary to use specified screw lest it should damage the screen.
3.3 Be sure to take anti dust measures. Any foreign substance that happens to fall down between the screen and the glass will affect the receiving and viewing effect
3.4 When dismantling or mounting the protective partition plate that is used for anti vibration and insulation please take care to keep it in intactness so as to avoid hidden trouble.
3.5 Be sure to protect the cabinet from damage or scratch during service, dismantling or mounting.

2.Alignment instructions

1. Test equipment

VG-848 (YPbPr, VGA signal generator)
VG-849 (HDMI signal generator)
FLUKE 54200(TV signal generator)
CA210 (white balancer)

2. Power test

Connect main board, power board and IR board according the wiring diagram, connect the power and press power key (Remote controller or Keypad) button to turn on the TV.

a) Test the pin voltage of P802/power board , the data is shown in table1:

Table1 voltage data of P802

For 32” & 42”									
P802	Pin1,2	Pin3,4	Pin5,6,7	Pin8,9	Pin10,11,12	Pin13	Pin14	Pin15	Pin16
Voltage	GND	22.8-25.2V	GND	11.4-12.6V	4.75-5.25V	On:2V-5.5V Off: 0-0.5V	<0.6V	2-5V	2.5-5V PWM

b) Test the pin voltage of P803/power board, the data is shown in table2:

Table2 voltage data of P803

For 32” & 42”						
P803	Pin1,2,3,4,5	Pin6,7,8,9,10	Pin11	Pin12	Pin13	Pin14
Voltage	22.8-25.2V	GND	NC	2.5V-5V	2.5-5V PWM	NC

3. Alignment flow-chart

The alignment flow-chart is shown as fig-1

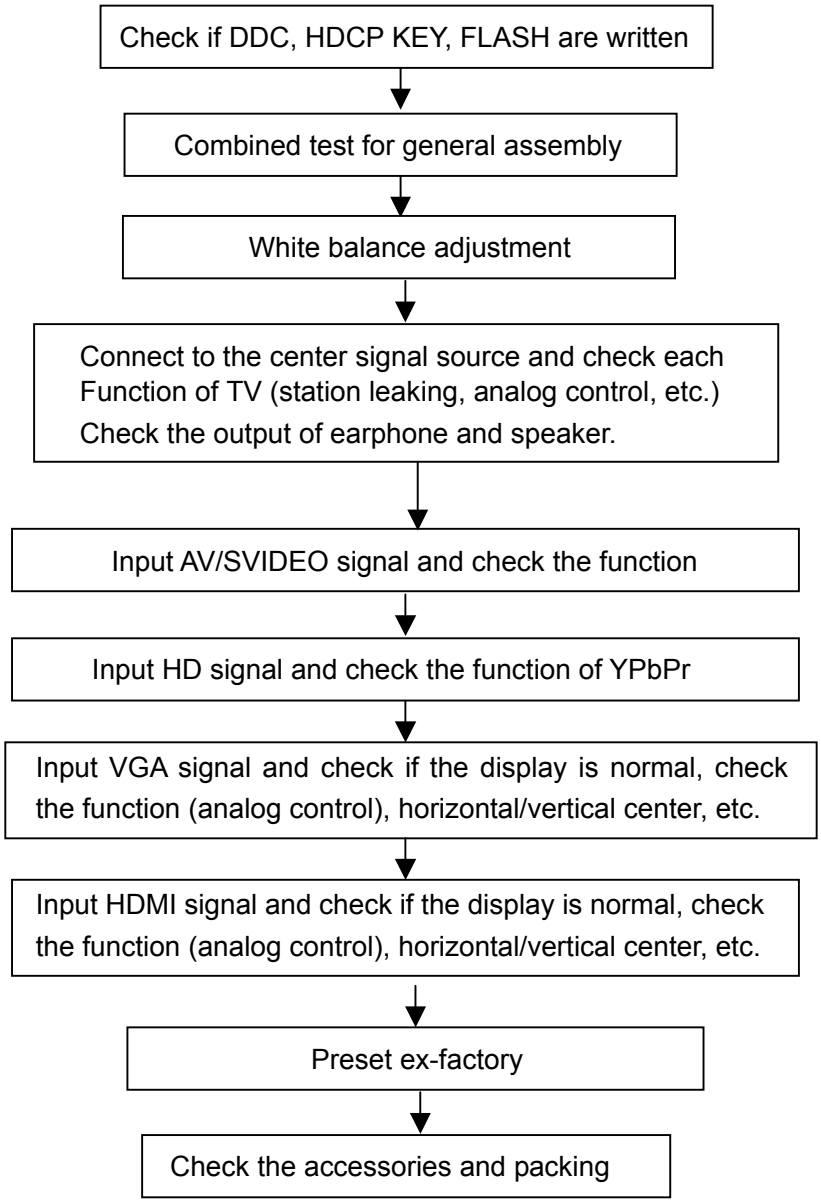

Check if DDC, HDCP KEY, FLASH are written
Combined test for general assembly
White balance adjustment
Connect to the center signal source and check each Function of TV (station leaking, analog control, etc.) Check the output of earphone and speaker.
Input AV/SVIDEO signal and check the function
Input HD signal and check the function of YPbPr
Input VGA signal and check if the display is normal, check the function (analog control), horizontal/vertical center, etc.
Input HDMI signal and check if the display is normal, check the function (analog control), horizontal/vertical center, etc.
Preset ex-factory
Check the accessories and packing

Fig-1 adjustment flow-chart

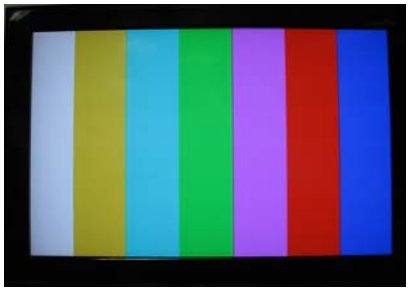
4. Adjustment instruction

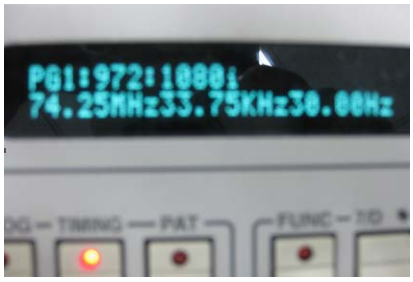
At any input source then press the “LEFT” key, “BACK” key and “OK” key orderly by the remote control to enter factory mode.

During Factory menu, if “MENU” (First layer) or “BACK” key is pushed, system will exit factory mode.

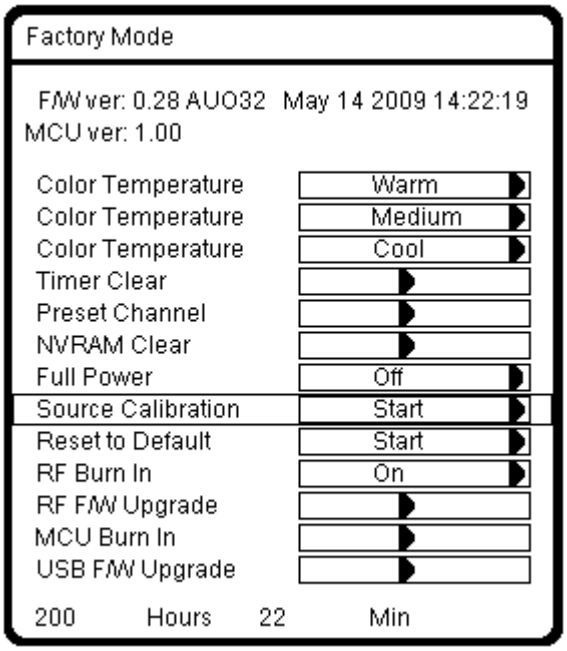
4-1. Source Calibration

4-1.1. Set the signal generator to input sources Video3 on LCD-TV; ASTRO-859 signal setting to1080i (PG1 mode Timing 972 and Pattern 969 Color Bar.)



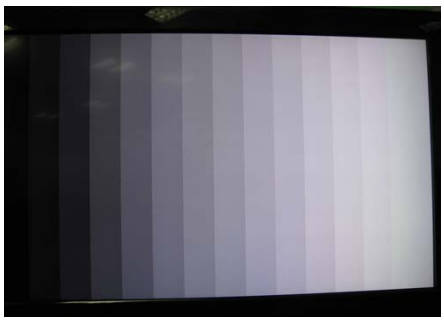


4-1.2. Entering into factory Mode: Press up or down key of remote control to select “Source Calibration”, Press 「RIGHT」 key to enter the item.

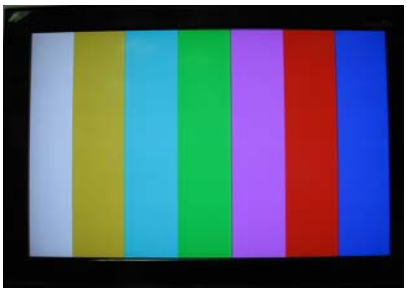


-> Source calibration performed automatically when finished that will show OK.

Repeat step 2 to do VGA input sources,
ASTRO-859 signal setting to1024X768 60Hz. (PG1 mode: Timing 856 and Pattern 921 Gray.)



Repeat step 2 to do TV input sources of Video1 (Composite-AV):
ASTRO-859 signal is set to Timing 969 PAL system and Pattern 969 color bar.



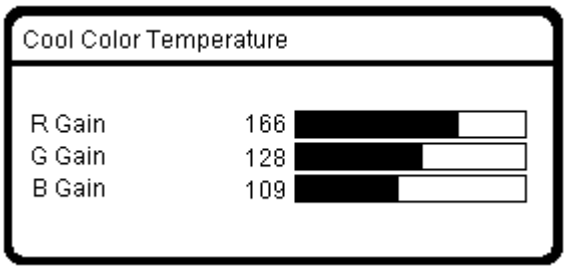
4-2. Color Temperature Adjustment & Check

4-2.1. Set the signal generator to RGB, 1024*768, 60HZ (ASTRO-859: PG1 856), Level: 0.56V (80%).

Full white pattern.

4-2.2. Press up or down key of remote control to select “Cool”, Press「OK」key to enter the item.
R, G, B drive values are set for COOL, Medium(Normal), and WARM independently.

4-2.3. Select「Cool」
Cool spec.
x= 0.267±0.010
y= 0.271±0.010

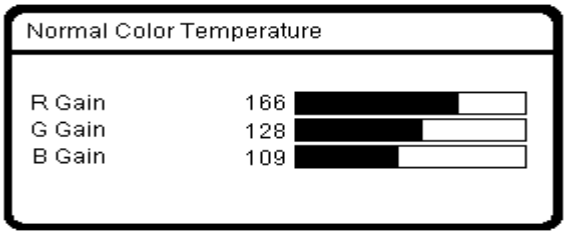


If the x and y value are larger than specification,
Decrease Green drive from default value.
Increase Blue drive from default value.

If the x or y or both x and y value is/are smaller than specification.
Decrease Blue drive from default value

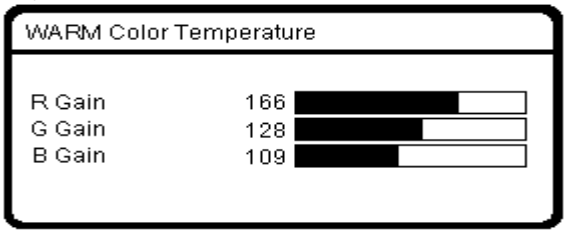
According to a x and y value, please following adjustment of 1 or 2.
1 If x value is higher than spec
Increase Green drive from default value.
Increase Blue drive from default value.
2 If y value is higher than spec,
Decrease Green drive from default value

4-2.4. Select [Medium---Normal]
Normal spec.
x=0.281±0.010
y=0.288±0.010



Adjust G drive (GREEN) or B drive (BLUE) to set x and y above.

4-2.5. Select [Warm]
WARM spec.
x=0.301±0.010
y=0.310±0.010



Adjust G drive (GREEN) or B drive (BLUE) to set x and y above.

4-2.6 Exit Factory Mode:
After finish adjusting color temperature, press [BACK] to exit factory mode.

5. Items of Factory menu

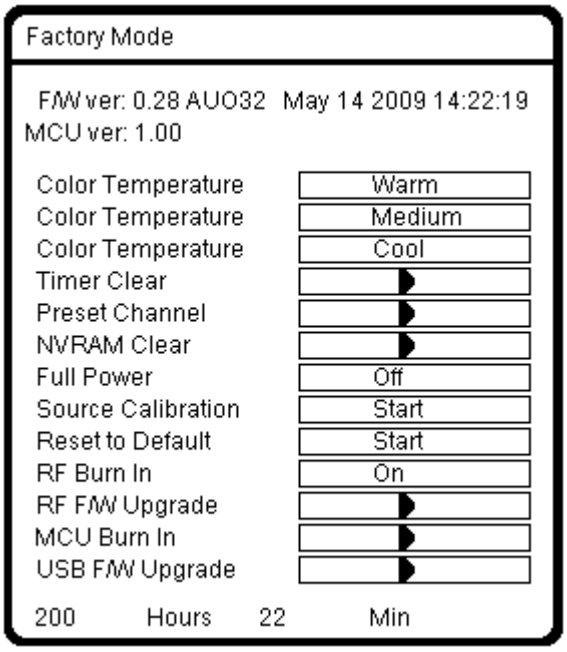
Vendor may customize design and add adjustment items Factory menu as far as all required items are included.

Press up and down key can move high light item from Color Temperature – WARM -> Color Temperature – Medium -> Color Temperature – Cool -> Timer Clear -> Preset Channel -> NVRAM Clear -> Full Power -> Source Calibration -> Reset to Default -> RF Burn In -> RF F/W Upgrade -> MCU Burn In -> USB F/W Upgrade.

The NVRAM Clear and Reset to Default items will have a check dialog “yes or no” to do or not.

Push “OK” key can select high light item function. (Press right key can adjust value)

Display model name, firmware version and released date on bottom



5-1) Cool

Press up or down key can select high light item function.

Press OK key to enter the item.

Following data for color temp shall be edited manually.

-R, G, B data for each preset.

-Press “Up” or “Down” key to select “R”, “G”, “B” item

-Press “Left” or “Right” key to set the “R”, “G”, “B” value.

- Press “MENU” or “BACK” item to exit to factory mode

5-2) Warm

Press up or down key can select high light item function.

Press OK key to enter the item.

Following data for color temp shall be edited manually.

-R, G, B data for each preset.

-Press “Up” or “Down” key to select “R”, “G”, “B” item

-Press “Left” or “Right” key to set the “R”, “G”, “B” value.

- Press “MENU” or “BACK” item to exit to factory mode

5-3) Normal (Normal)

Press up or down key can select high light item function.

Press OK key to enter the item.

Following data for color temp shall be edited manually.

-R, G, B data for each preset.

-Press “Up” or “Down” key to select “R”, “G”, “B” item

-Press “Left” or “Right” key to set the “R”, “G”, “B” value.

-Press “MENU” or “BACK” item to exit to factory mode

5-4) Timer Clear

Press up or down key can select high light item function.
Press Right key to enter the item.

Reset the timer which records hours of LCD panel burn in.

5-5) Preset Channel

Press up or down key can select high light item function.
Press Right key to enter the item.

The system will be loaded preset channel for production line.
- ATV(Analog TV), DTV(Digital TV)

5-6) NVRAM Clear

Initialize program’s default values to NVRAM for following adjustment items accuracy.

In factory mode it is the first and important step to make sure all values are default value and correct.

- Reset settings: Gamma table, Channel table (Favorite channel, Channel label etc.), Model table (H/V Position, Clock, Phase), Source dependent setting (Contrast, Brightness etc.), Common setting (Volume, Language etc.), Parental Control (Rating, Password etc).

To avoid a mistake initial process after factory setting is done. This item will have a check dialog “yes or no” to do the initial or not.

NOTICE:

After this item is processed then needs to be DC powered on/off.

5-7) Full power

This is for power consumption testing.

To measure the maximum power consumption of TV set, we adjust the value of following items to maximum.

- Contrast
- Brightness
- Audio output

5-8) Source Calibration

Auto Calibration (gain/offset) must be adjusted color by firmware automatic adjustment in PC, Video1 (Composite) and Video3 input source.

5-9) Reset to Default

Reset all settings of OSD menu to default value and will go to standby mode.

- Reset settings: Channel table, Model table (H/V Position, Clock, Phase), Source dependent setting (Contrast, Brightness etc.), Common setting (Volume, Language etc.)

5-10) RF Burn In

RF (ANT) no signal input, use “snow” pattern for burn in.

5-11) RF F/W Upgrade

Press Right key to enter the item.
To avoid a mistake F/W Upgrade process after factory setting is done. This item will have a check dialog “yes or no” to do the upgrade or not.

5-12) MCU Burn In

Press Right key to enter the item.
To avoid a mistake MCU Upgrade process after factory setting is done. This item will have a check dialog "yes or no" to do the upgrade or not.

5-13) USB F/W Upgrade

Press Right key to enter the item.
The function can be switched On/Off the update of the boot code
And the F/W can be updated on USB by pressing Right key.

6. Dealer Mode Function

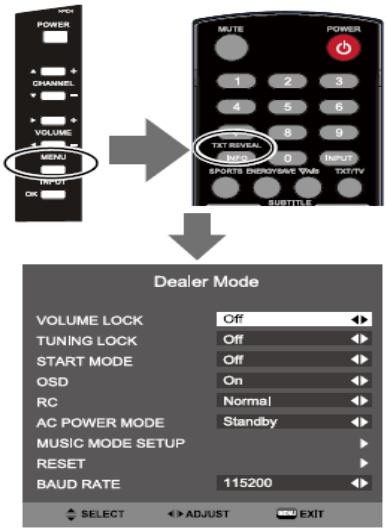
DEALER MODE

The Dealer mode has 9 different functions:
VOLUME LOCK, TUNING LOCK, START MODE, OSD, RC, AC POWER MODE, MUSIC MODE SETUP, RESET, and BAUD RATE.

HOW TO USE DEALER MODE

This function limits the maximum volume value in the range 0 to 32.

1. Press and hold **MENU** button on side control and then press **INFO** button on remote control, to display "Dealer Mode" menu.
2. Press ▲▼ buttons to select desired item.
3. Press **OK** button to confirm the selection.



VOLUME LOCK

This function limits the maximum value of the volume. The range is set from 0 to 32.
If the function is set to "OFF", the volume won't be limited in range.

TUNING LOCK

This function locks all channels to prevent user adding/removing TV or DTV channels.
If the function is set to "OFF", customers can search/clear TV or DTV channels.

START MODE

This function decides which display source will appear after AC/DC Power-On.
Sources are as follow: "ATV", "TV-0" ~ "TV-10", "DTV", "DTV-0" ~"DTV-10", "Video 1", "Video 2", "Video 3", "HDMI 1" , "HDMI 2" , "HDMI 3" and "PC".
If this function is set to "OFF", the display will follow the last source on Power On/Off.

OSD

When this function is set to "OFF", the OSD won't be displayed on screen by Remote/Keypad activation.
If the function is set to "ON", the display will shown the OSD from Remote/Keypad activation.

RC

This function can switch on/off the remote control.
When the function is set to "Normal", the command can be executed by Remote Control.
When the function is set to "Prohibit", the command can't be executed by Remote Control, except with Dealer's Hot-Key.

AC POWER MODE

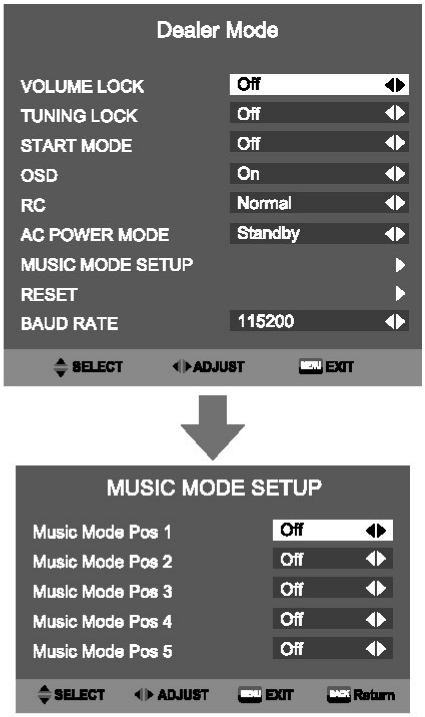
This function has 3 modes, “Standby”, “On” and “Last”.
Under “Standby” mode, the LCD will come to Power-Off state after AC OFF/ON.
Under the “On” mode, the LCD will come to Power-On state after the AC OFF/ON.
Under the “Last” mode:
If the power is On state before the AC OFF, the LCD will come to Power-On after the AC ON.
If the power is Off state before the AC OFF, the LCD will come to Power-Off after the AC ON.

MUSIC MODE SETUP

This function supports 5 channels to listen to music on ATV.

Note: ”First 5 channels” means the (first, second ,third, fourth and fifth) channel after TV auto-searching.
Setting is in done in the next layer by pressing ► button in Dealer Mode.

Each item can be selected from the assigned channels from 0 to 99. (Selected channel needs to exist in the TV)
If the items are set to OFF, the channel will return to show original picture.)



RESET

Function returns to the initial value of the Dealer mode setting.

BAUD RATE

The function supports the master baud rate to control the parameters of the system.
If the Baud Rate is different from the control, the command won’t be executed.

7. Performance check

7-1 TV function

Connect RF to the center signal source, enter Channel menu → auto tuning, check if there are channels be skipped, check if the picture and speaker are normal.

7-2 AV/S-Video terminals

Input AV/S-Video signal, check if the picture and sound are normal.

7-3 YPbPr/YCbCr terminal

Input YUV signal (VG848 signal generator), separately input the YUV signals listed in table4 and check if the display and sound are normal at any situation (power on, channel switch and format convert, etc.)

Table4 YUV signal format

(Table) Component Video Timing Chart

No	Signal mode			Horizontal Frequency(KHz)	Dot clock Frequency (MHz)
	Signal name	Resolution	Vertical Frequency(Hz)		
1	576i	720(1440)x576	50	15.63	27
2	480i	720(1440)x480	59.94	15.73	27
3	576P	720x576	50	31.25	27
4	480P	720x480	59.94	31.47	27
5	1080i/50	1920x1080	50	28.13	74.25
6	1080i/60	1920x1080	60	33.75	74.25
7	720P/50	1280x720	50	37.5	74.25
8	720P/60	1280x720	60	45	74.25
9	1080P/50	1920x1080	50	56.25	148.5
10	1080P/60	1920x1080	60	67.5	148.5

7-4 VGA terminal

Input VGA signal (VG848 signal generator), separately input the signals listed in table5 and check the display and sound. If the image is deflection of the Horizontal and vertical, select Menu->Setup->Auto Adjust to perform auto-correct.

Table5 VGA signal format

No	Signal mode			Horizontal Frequency(KHz)	Dot clock Frequency (MHz)
	Signal name	Resolution	Vertical Frequency(Hz)		
2	VESA	640x480	60	31.47	25.18
		800x600	60	37.87	40
		1024x768	60	48.36	65
		1280x768	60	47.39	68.25
		1280x768	60	47.77	79.5
		1280x1024	60	63.98	108
5		1360x768	60.015	47.712	85.5

7-5 HDMI terminal
Input HDMI signal (VG849 signal generator), separately input the signals listed in table4 and table5 and check the display and sound (32 KHz, 44.1 KHz, 48 KHz) at any situation (power on, channel switch and format convert, etc.)

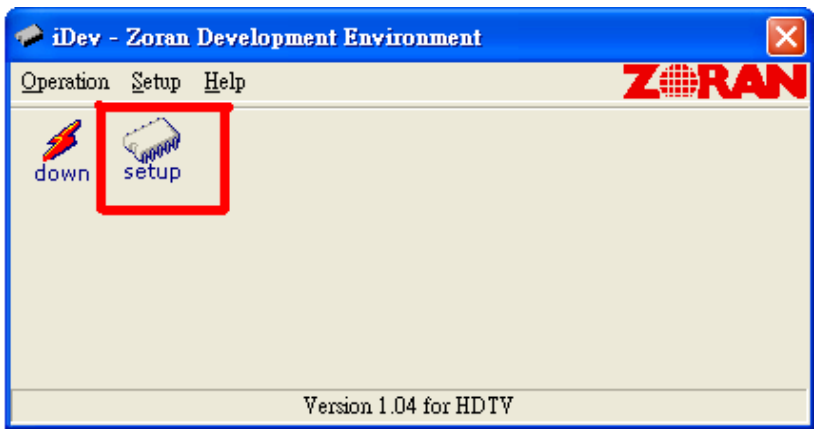
7-6 other functions check
a) Check the turn on/turn off timer, sleep timer, picture/sound mode, OSD, stereo and analog TV Teletext, etc.

8. Software instruction

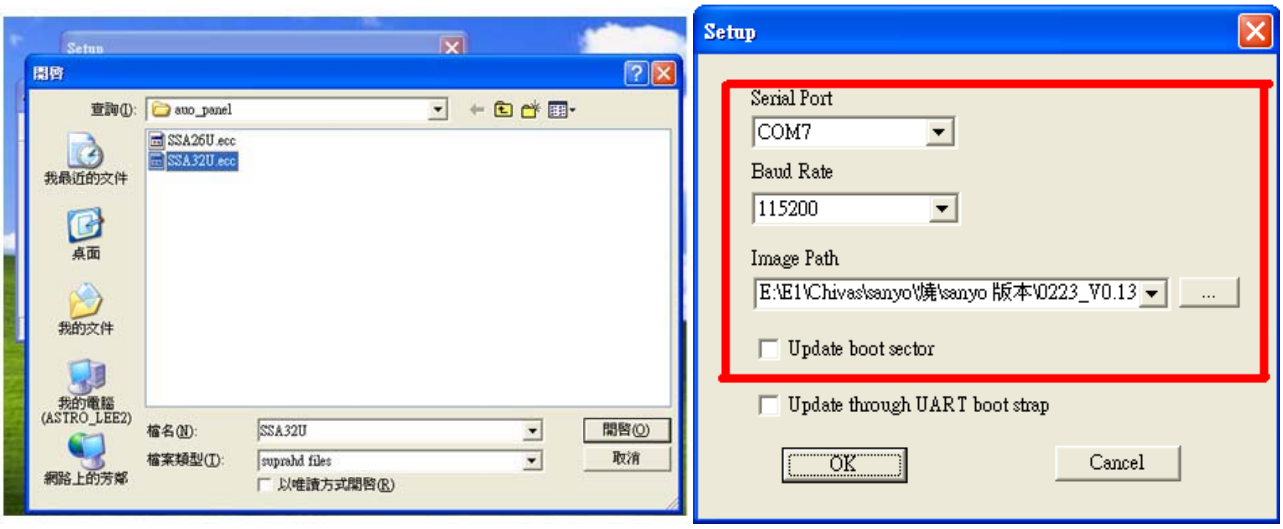
(1) USB-RS232 Tool and RS-232 male to female cable
Follow below connecter function with PC and LCD TV.

(2) To connect the RS-232 cable male terminal to TV set RS-232 service port.

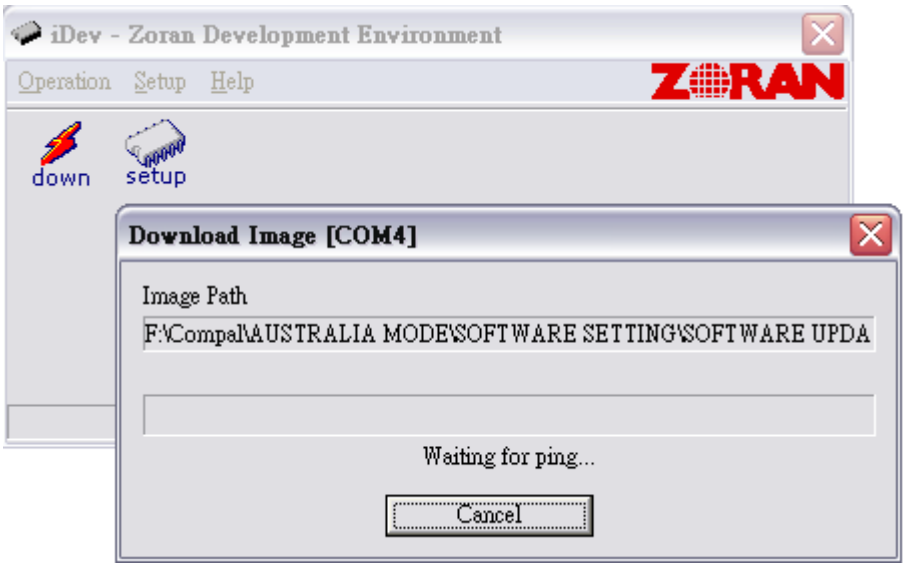
(3) To select “Setup” function to set the environment.



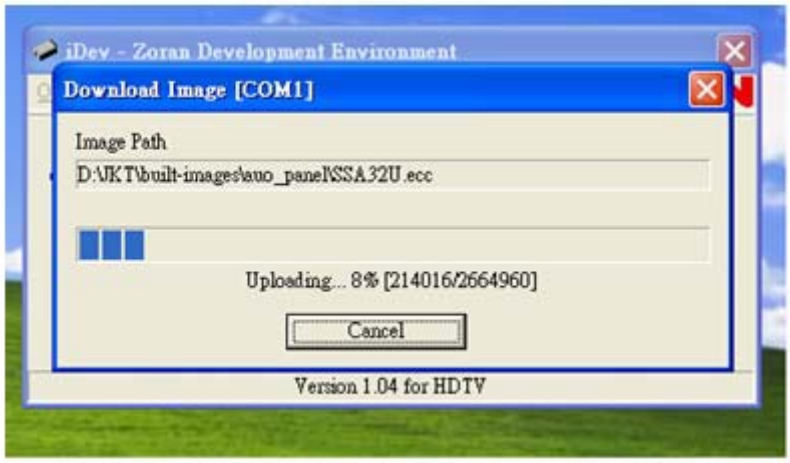
(4) Setting the Baud Rate to “115200” and select the update firmware file and press “OK” button.



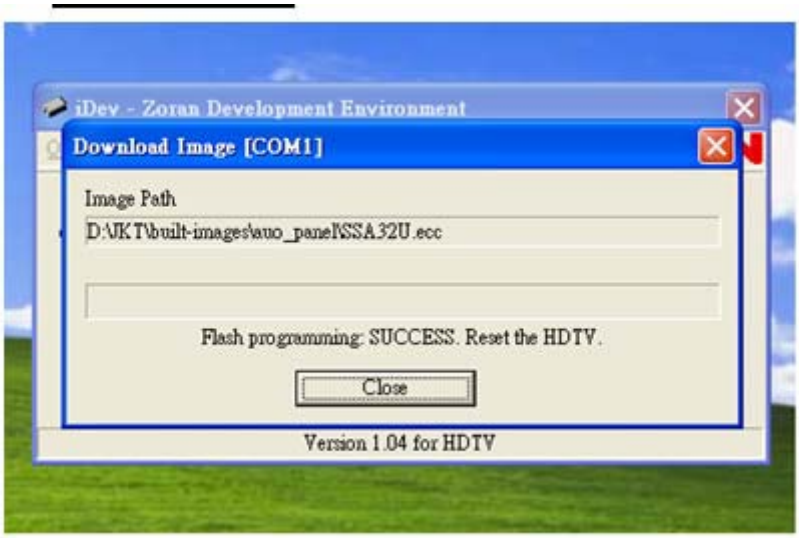
(5) To select “down” pattern that will show the “waiting for ping” message, then you can turn on the power by pressing “DC Power on” button.



(6) When you find below message, please waiting for the F/W updating.



(7) When the update is finished that will show the “Close” pattern, please press the button to close the tool of the RS232.



9. SSU F/W Upgrade method (DTV Only)

The “SSU” function (system software update) can auto-detect current software versions, through three sub-functions i.e. “update function”, “countdown function”, and “manual function”.
Update method relies on new code sent from an assigned DTV channel.

How to enter the SSU

1 Press **MENU** button to open the OSD MENU and then press ◄► buttons to select “Function”.

2 Press ▲▼ buttons to select “SSU” function and press **OK** button to enter the setting.

3 Under the SSU function, press ▲▼ buttons to select the type of update code on the OSD MENU.

4 Press the ◄► buttons to change the selected type.

Note:
- **The SSU function requires activation of a “START” command with the OK button.**

Allow system software update

The “update function” is controlled by the “Allow system software update” item.
The system will detect from the firmware whether the code is the latest version or not.
In this setting, the update function will always detect the latest version at anytime.

Update Function	Description
OFF	Turns the auto-detect function off
ON	Detects latest version at anytime

Viewer Prompt to Update

“Countdown function” is in the “Viewer Prompt to Update” item.

This updates time count.

Under this setting, if there is no new version the message “No new software version found”, will display otherwise the system will directly perform firmware update and show update status in the OSD window.

Countdown Function	Description
OFF	System will execute a firmware update after countdown .
ON	Will prompt user a new version is available but wont execute update by itself. After countdown will turn off prompt.

Note:

• When a firmware update is available the system will execute the update after waiting about 10 seconds.

Daily Time to Check for SSU

Unit will check for firmware update at a set time each day.

The time format is hours and minutes.

Manually search for SSU

“Manual function” can directly update the latest version by pressing the **OK** button on “START” item.

Under firmware updating, if no new version is found the message “No new software version found” will be displayed, otherwise the system will automatically execute update and show update status in the OSD window.

Update at Standby Mode

“Update at Standby Mode” only manual update can do and if user turn off during updating. This power LED (red) is flashing and POWER LED (red) is lighting at updating finish. (Don’t remove AC cable during power LED flashing.)

Working principle analysis of the unit

1. PAL and DVB-T signals flow:
Antenna reception, B/G, I, D/K, DVB-T" signal will be send to tuner FQD1116ME, then Tuner will be demodulating and output standard video signal TV-CVBS, DVB-T and sound IF signal (SIF).

TV-CVBS will send to the master control IC ZR39670HGCF to video decode, de-interlace and scaler, then output LVDS level drive for panel display.

DVB-T will be fed into WJE6353, after OFDM demodulator, the digital signal will be transform into MPEG transport stream out by DVB-T COFDM Terrestrial IC and sent to scaler IC ZR39670HGCF processing, then output LVDS level drive for panel display.
The sound IF (SIF) will be fed into MSP4410K, after demodulating, pre-amplifying, bass adjusting and volume control, the sound signal will be transform into digital I2S signal by Sound Processor IC and sent to digital amplifier TAS5706 amplifying, then sent to speaker. About Earphone output, MSP4410K will be sent analog signal to earphone amplifier TPA6110 then output to Earphone.

2. AV/SV signal flow
SV signal and the Video1 path AV signal switch by menu "Setup"->"AV Connecting"->"Video1 input" via terminal socket, the signal and the Video2 path AV signal will be fed to ZR39670HGCF to perform video decode, de-interlace and scaler, then output LVDS drive level for panel display.

Audio signal from AV/SV terminal via matched resistance is fed to MSP4410K to bass adjust and volume control, the sound signal will be transform into digital I2S signal by Sound Processor IC and sent to digital amplifier TAS5706 amplifying, then sent to speaker. About Earphone output, MSP4410K will be sent analog signal to earphone amplifier TPA6110 then output to Earphone.

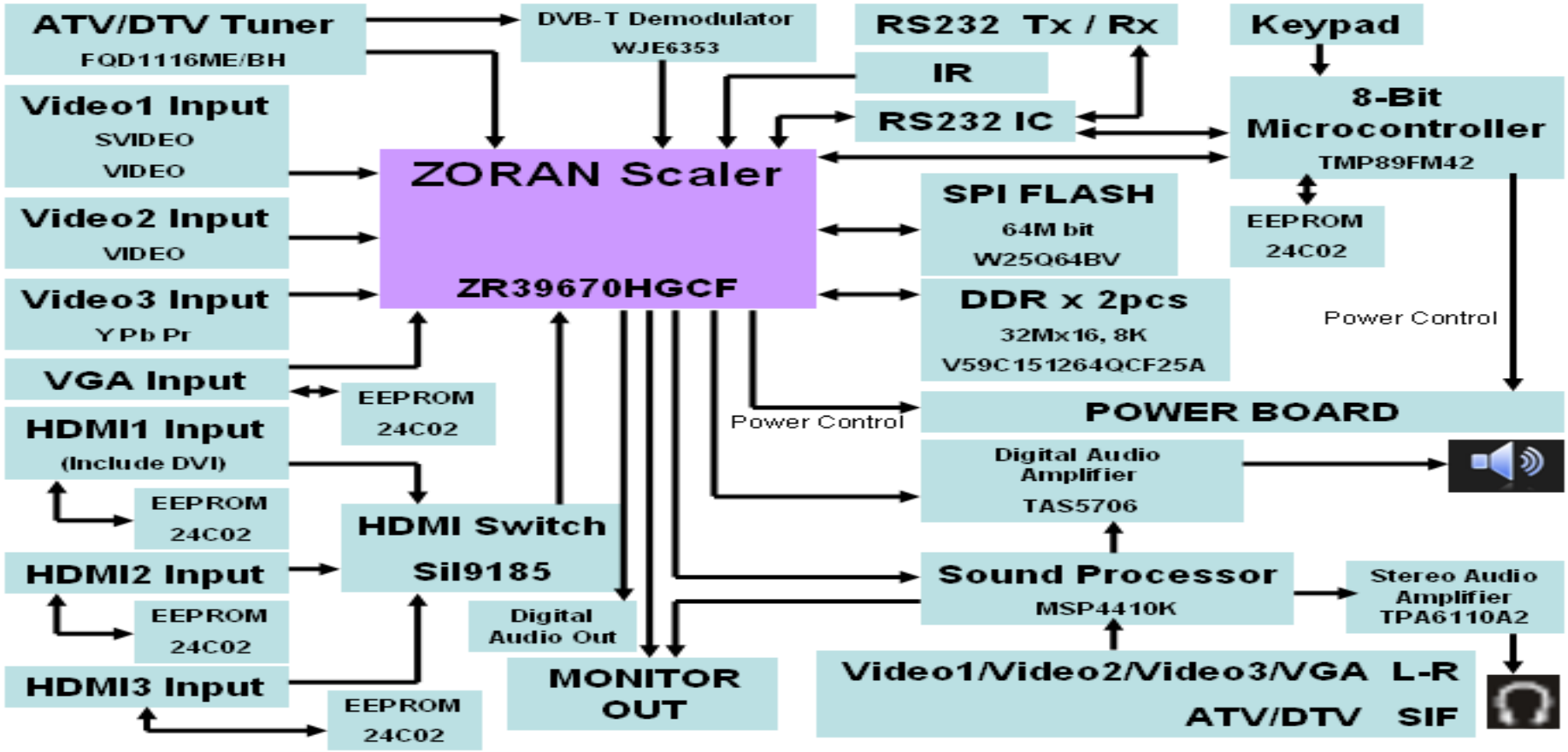
3. PC/YPrPb signal flow
PC and the Video3 path YPbPr signal are via terminal sent to ZR39670HGCF A/D conversion, output R/G/B of 24 bit to back end module to digital decode, image scale, then send to LVDS level drive for panel display.

Sound signal of PC/YPrPb terminal via matched resistance and sent to MSP4410K to bass adjust and volume control, the sound signal will be transform into digital I2S signal by Sound Processor IC and sent to digital amplifier TAS5706 amplifying, then sent to speaker. About Earphone output, MSP4410K will be sent analog signal to earphone amplifier TPA6110 then output to Earphone.

4. HDMI signal flow
Three HDMI video signals via switcher Sil9185 are directly fed to the master control IC ZR39670HGCF to digital decode, image scale, then output LVDS drive level for panel display. HDMI audio signal via decoder built-in ZR39670HGCF is transform into digital I2S signal by scaler IC, and sent to MSP4410K to bass adjust and volume control, the sound signal will sent to digital amplifier TAS5706 amplifying, then sent to speaker. About Earphone output, MSP4410K will be sent analog signal to earphone amplifier TPA6110 then output to Earphone.

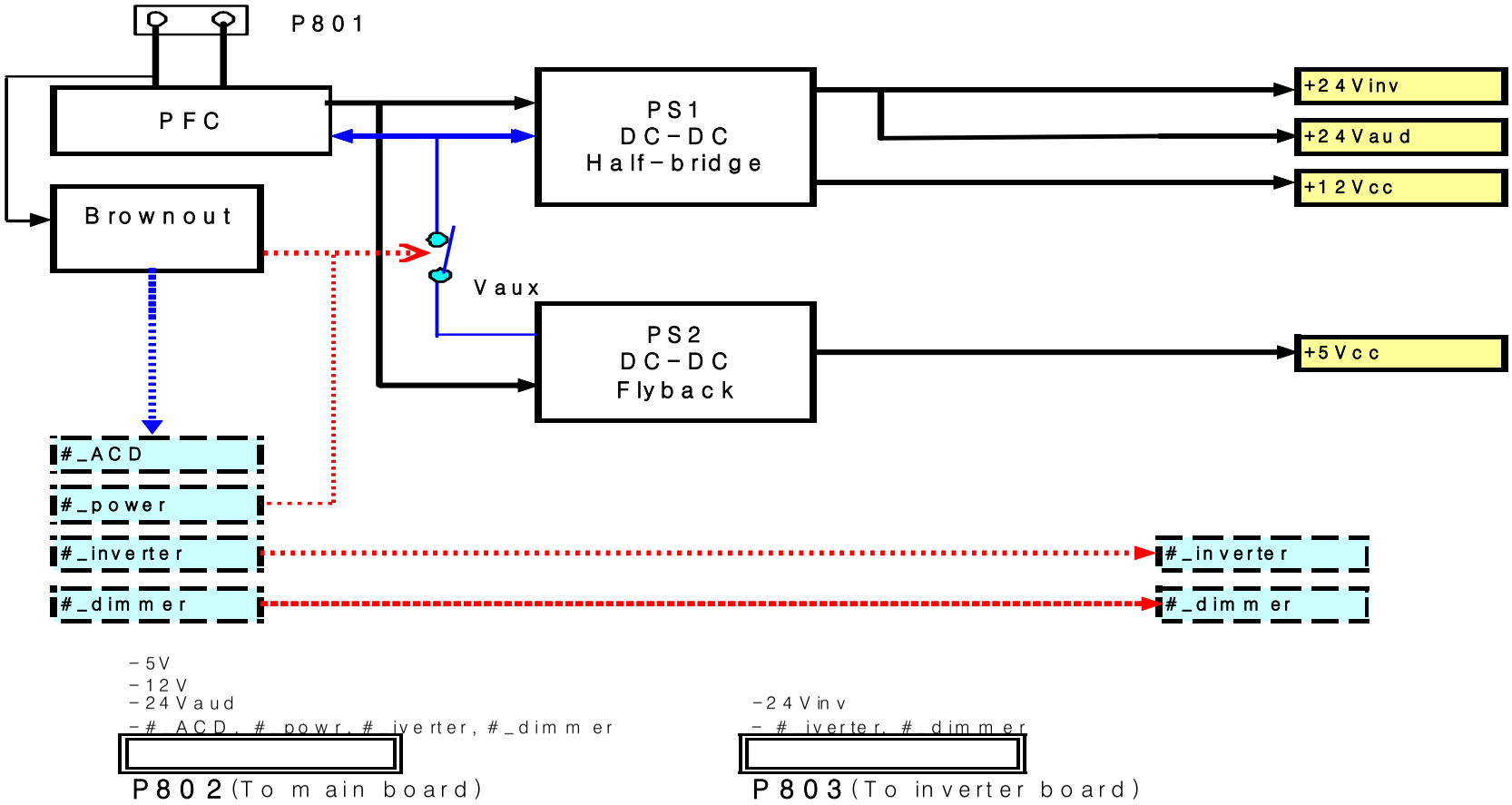
Sanyo 32”/42” Block Diagram

I. Block Diagram



II. Block diagram-POWER-32”/42”

III.



IC block diagram

1. Zoran ZR39670

Feature:

Embedded High Performance 300MIPS CPU

- Integrated MIPS 4KEc™ CPU, 300MHz
- Intended to run RTOS, audio decode and Application software
- 32-bit MIPS32 enhanced architecture
- 8 K instruction cache, 8 K data cache, (2-way set associative)
- MMU with 16-dual entry (TLB)

Integrated HDMI Link and PHY

- Two Independent instances of the PHY
- Support for HDMI v1.3
- Integrated Secure HDCP Keys

Integrated HD ADC

- Three YPbPr inputs (Two SCART)(Up to 1080p)
- One RGB input (Up to WUXGA)
- Up to 165 MHz input bandwidth

High-Performance MPEG-2 Video Decoding Engine

- Support for a single MP@HL decoder

Integrated Dual Channel LVDS Output for direct Panel Display support

- Supports up to 165MHz
- 1080p Output Flat Panel Support
- 100/120 Hz Operation with 768p panels
- 6, 8, 10 and 12-bit panel support

Integrated NTSC/PAL/SECAM Decoder

SCART Support

- Fast Blank/Fast switch inputs
- Video DAC for CVBS output

Display Processor & Controller

- PIP operation with Digital/Analog PIP

Common Interface (CI)

Integrated USB 1.1 Interface

System Interfaces

- Two 2-signal UARTs
- Three I2C master or Slave interfaces (up to 400 kb/s)
- One IR Receive, with hard N are demodulation
- Guest bus interface
- SPI interface

Device Unique Chip ID

- 128-bit device unique secret key

Memory Interface Unit

- High performance 32-bit DDR2 interface (400MHz)
- Up to 3.2GByte/second peak memory throughput

Process Technology

- 80 nm CMOS

Power

- 1.1 V core voltage 1.8 V Memory I/F, 3.3 V I/O

Packaging

- 35 mm x 35 mm Plastic Ball Grid Array package
- 632 BGA

2. FQD1116ME
DVB-T/Analog hybrid terrestrial video module

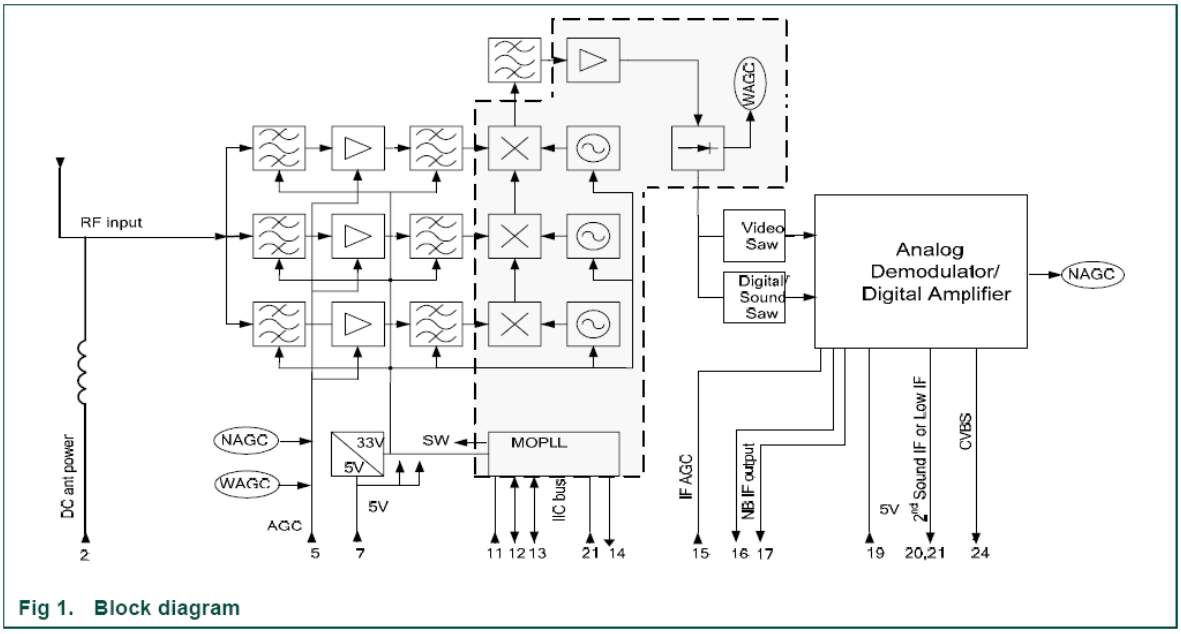
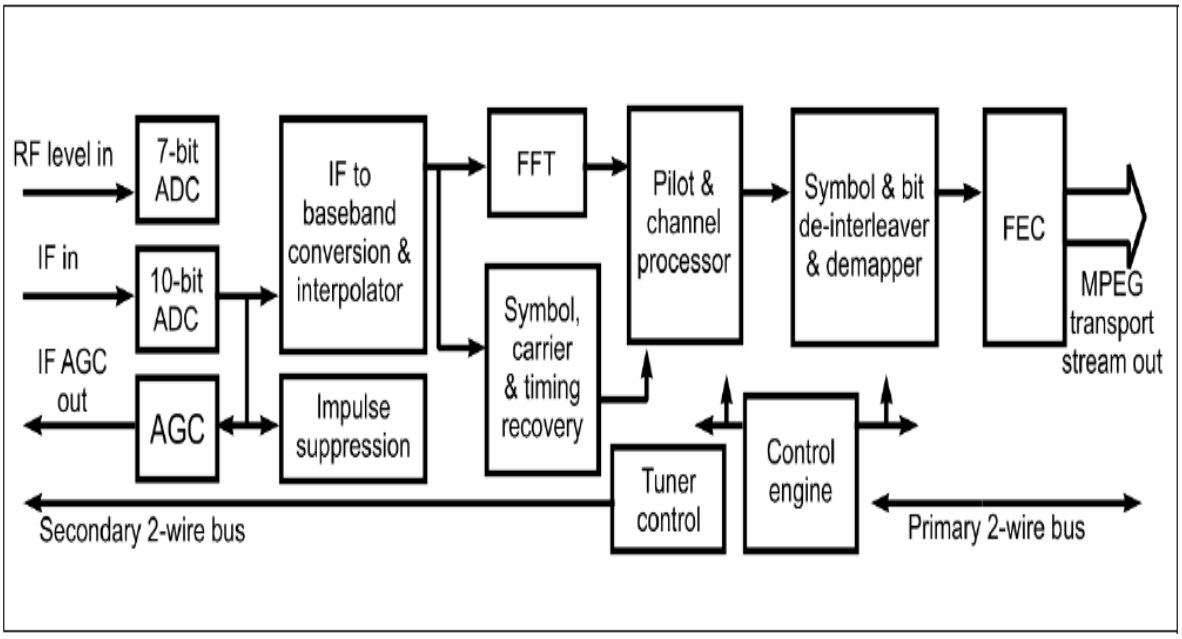


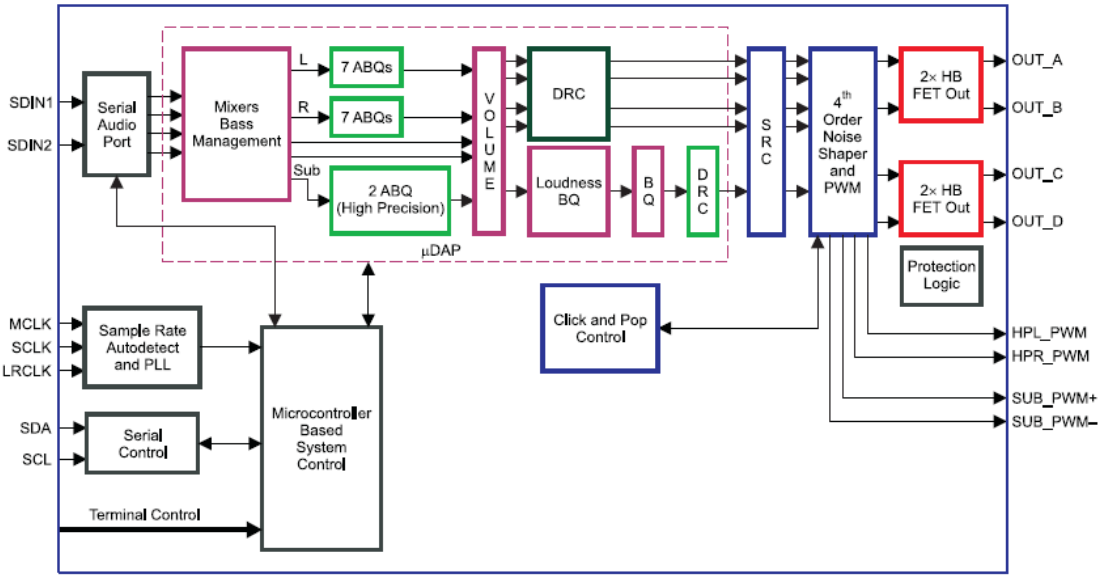
Fig 1. Block diagram

3. WJE6353
Nordig Unified DVB-T COFDM Terrestrial Demodulator for PC-TV and Hand-held Digital TV (DTV)



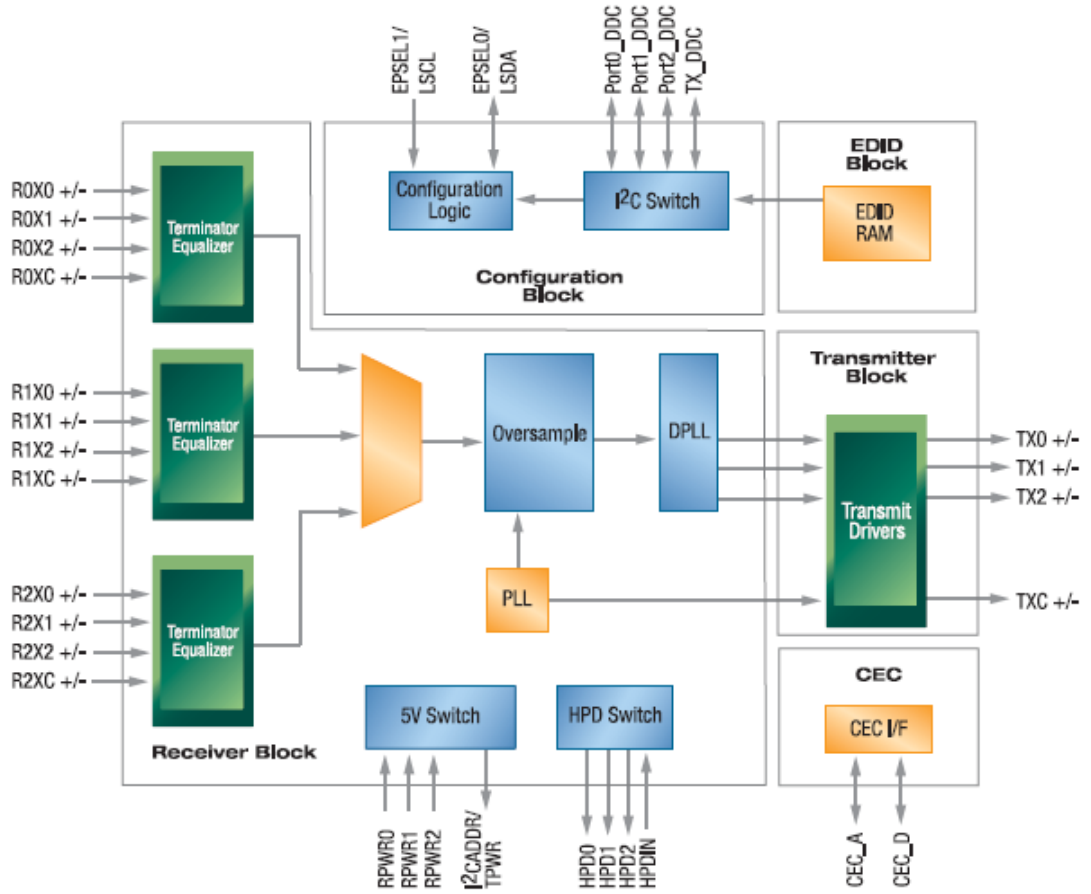
4. TAS5706

20-W Stereo Digital Audio Power Amplifier with EQ and DRC



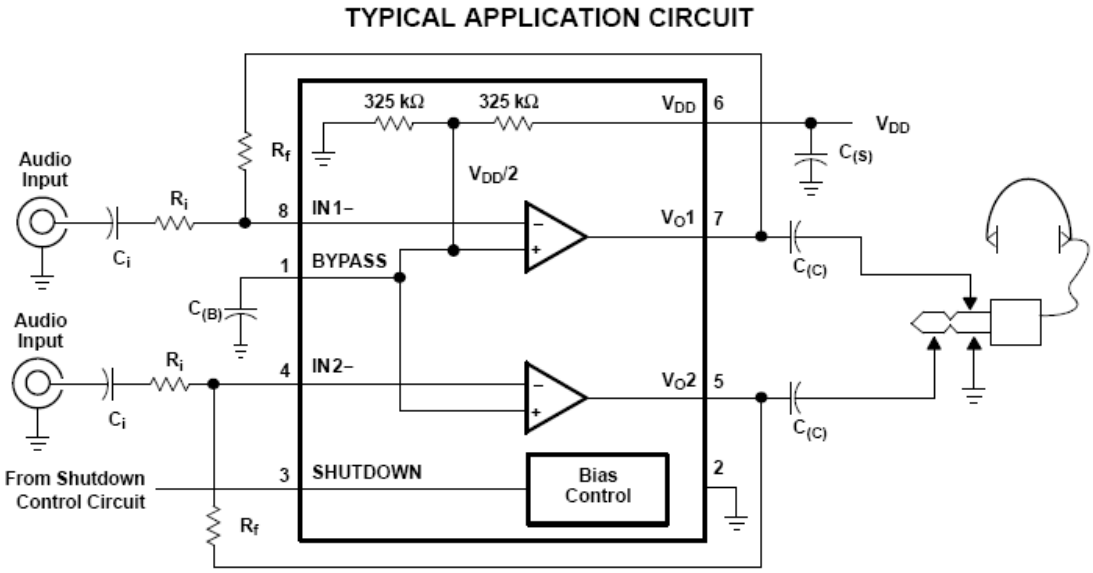
5. SiI9185

3:1 HDMI 1.3 Switch



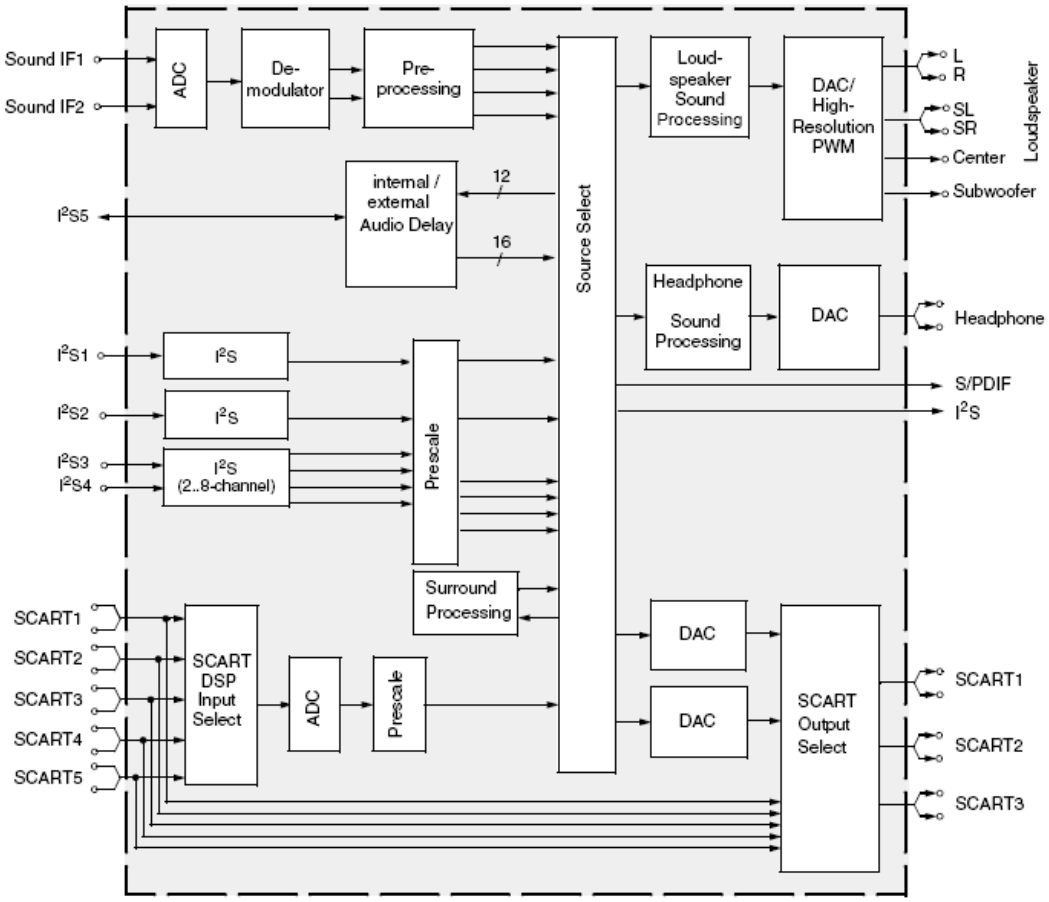
6. TPA6110A2

150-mW STEREO AUDIO POWER AMPLIFIER



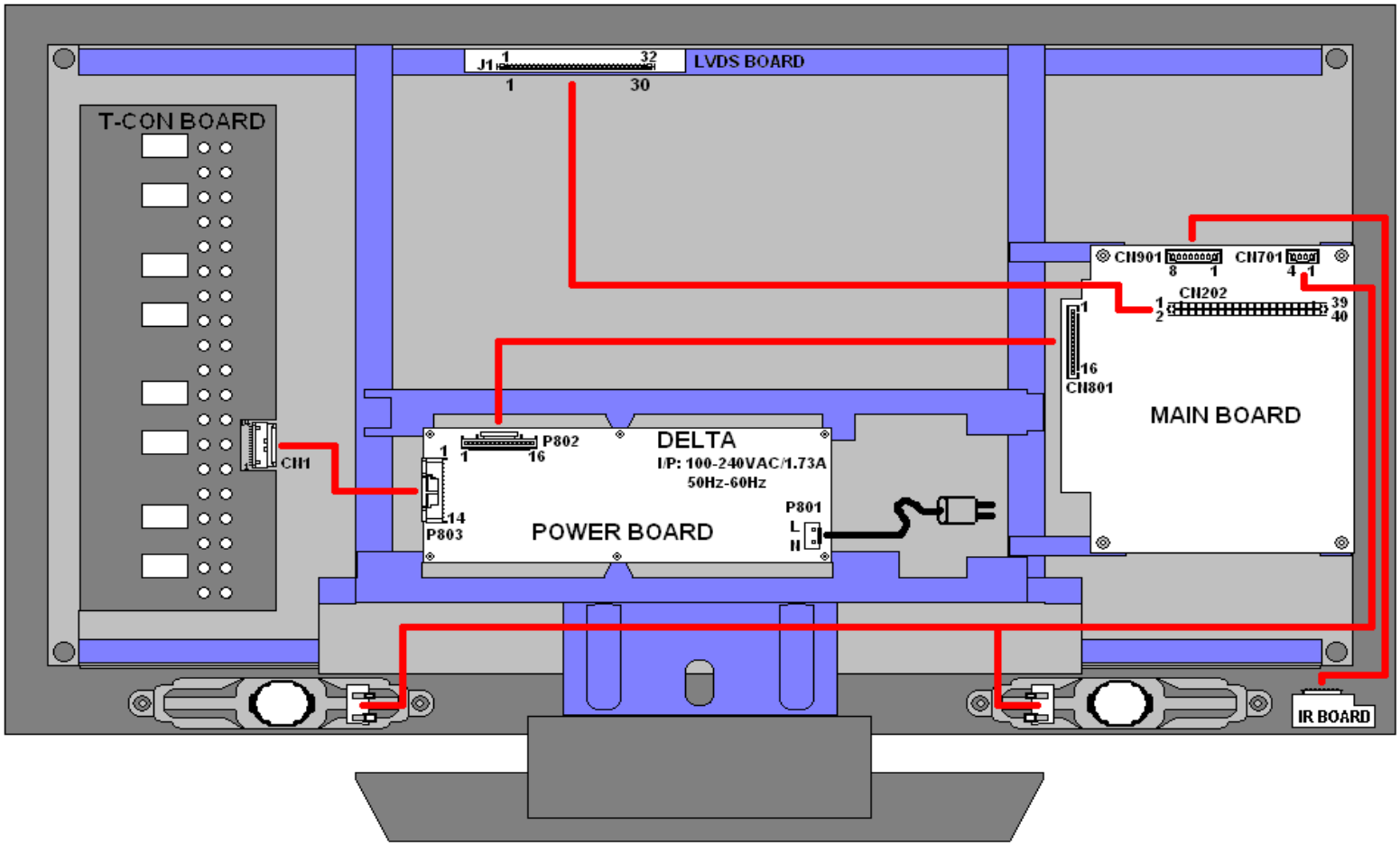
7. MSP4410K

Multi-standard Sound Processor

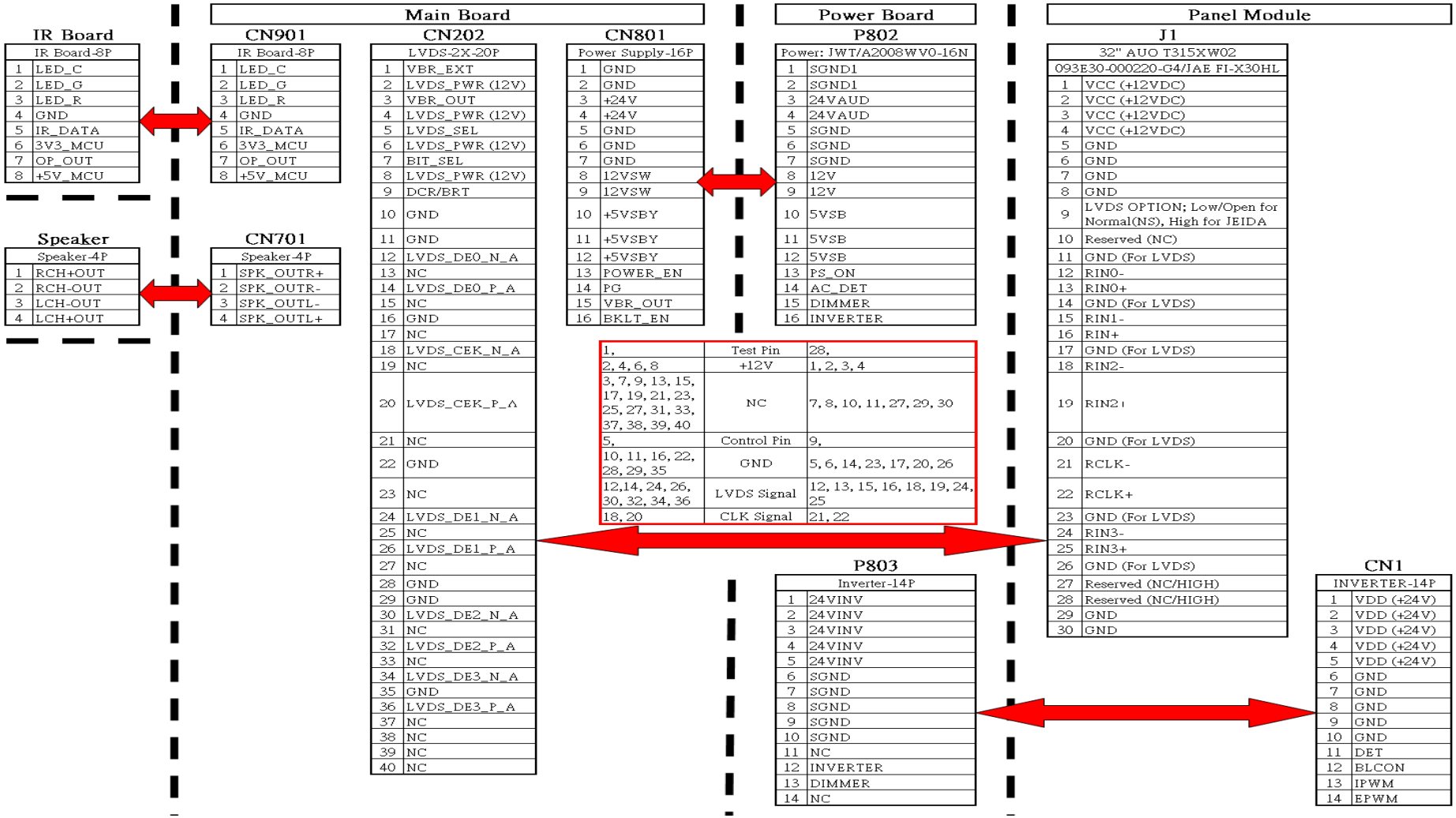


Sanyo 32-inch Wiring Diagram

I. BLOCK

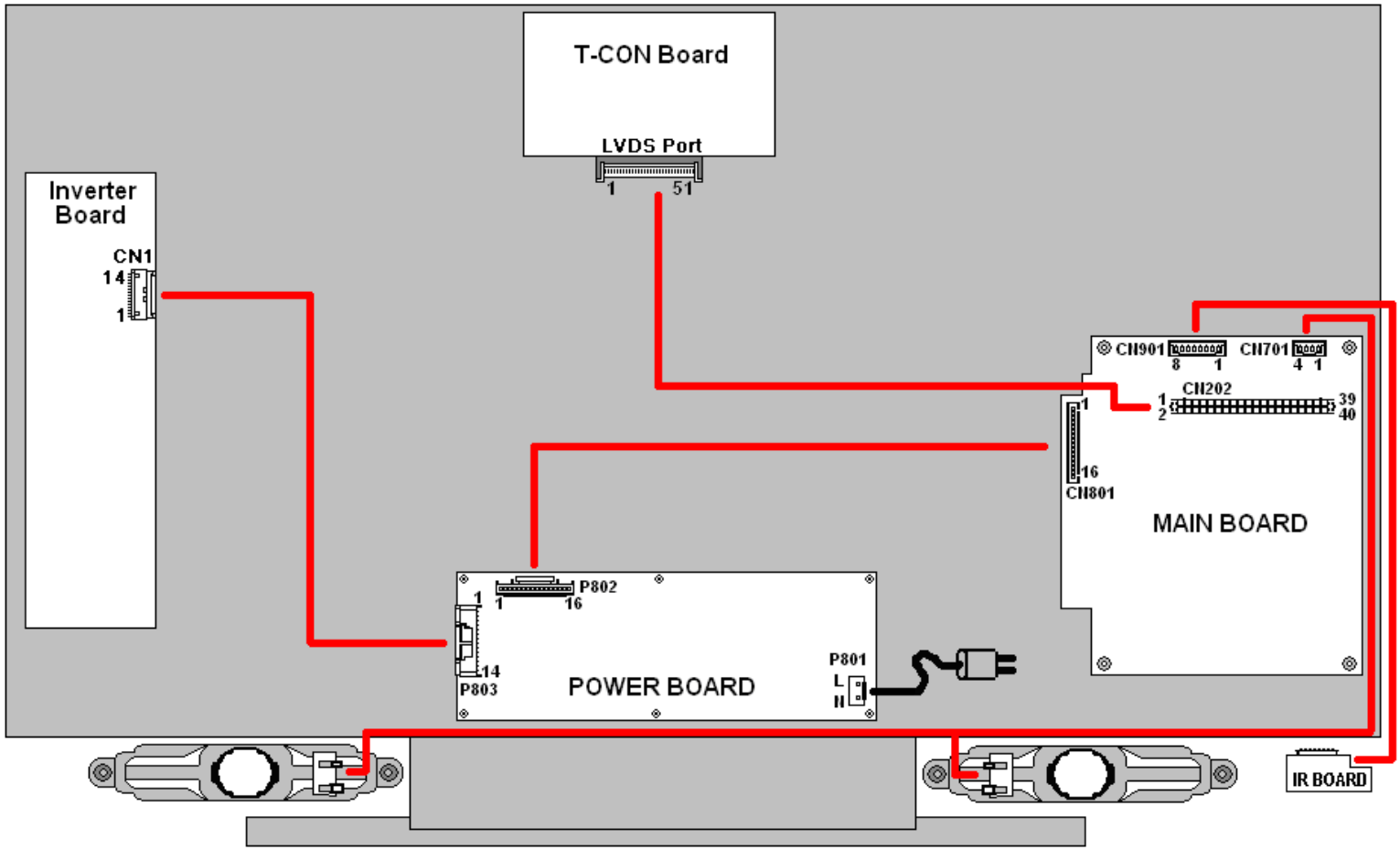


II. Wiring Connection

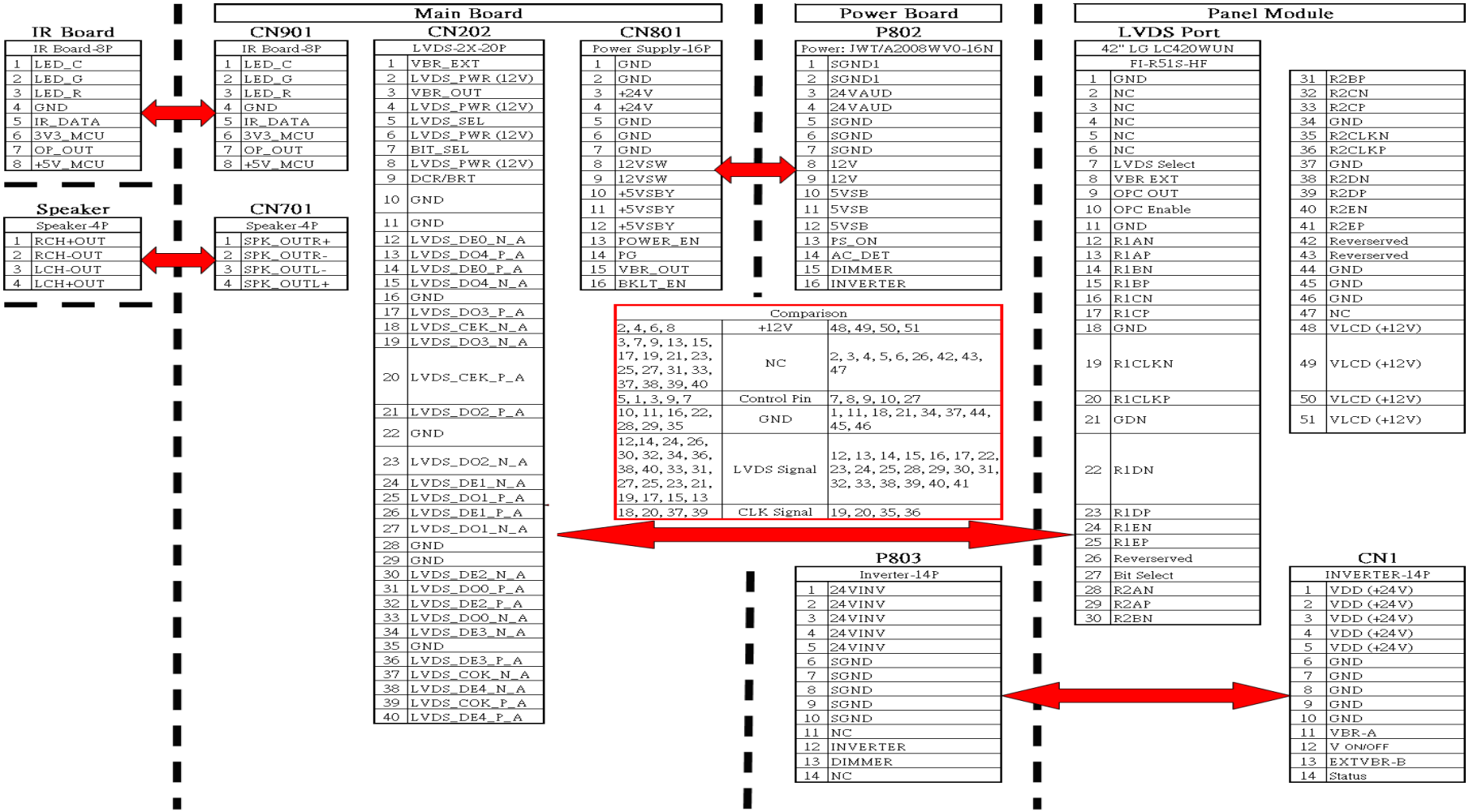


Sanyo 42-inch Wiring Diagram

III. BLOCK



IV. Wiring Connection



IR Board

IR Board-8P	
1	LED_C
2	LED_G
3	LED_R
4	GND
5	IR_DATA
6	3V3_MCU
7	OP_OUT
8	+5V_MCU

Speaker

Speaker-4P	
1	RCH+OUT
2	RCH-OUT
3	LCH-OUT
4	LCH+OUT

Main Board

CN901

IR Board-8P	
1	LED_C
2	LED_G
3	LED_R
4	GND
5	IR_DATA
6	3V3_MCU
7	OP_OUT
8	+5V_MCU

CN701

Speaker-4P	
1	SPK_OUTR+
2	SPK_OUTR-
3	SPK_OUTL-
4	SPK_OUTL+

CN202

LVDS-2X-20P	
1	VBR_EXT
2	LVDS_PWR (12V)
3	VBR_OUT
4	LVDS_PWR (12V)
5	LVDS_SEL
6	LVDS_PWR (12V)
7	BIT_SEL
8	LVDS_PWR (12V)
9	DCR/BRT
10	GND
11	GND
12	LVDS_DE0_N_A
13	LVDS_DO4_P_A
14	LVDS_DE0_P_A
15	LVDS_DO4_N_A
16	GND
17	LVDS_DO3_P_A
18	LVDS_CEK_N_A
19	LVDS_DO3_N_A
20	LVDS_CEK_P_A
21	LVDS_DO2_P_A
22	GND
23	LVDS_DO2_N_A
24	LVDS_DE1_N_A
25	LVDS_DO1_P_A
26	LVDS_DE1_P_A
27	LVDS_DO1_N_A
28	GND
29	GND
30	LVDS_DE2_N_A
31	LVDS_DO0_P_A
32	LVDS_DE2_P_A
33	LVDS_DO0_N_A
34	LVDS_DE3_N_A
35	GND
36	LVDS_DE3_P_A
37	LVDS_COK_N_A
38	LVDS_DE4_N_A
39	LVDS_COK_P_A
40	LVDS_DE4_P_A

CN801

Power Supply-16P	
1	GND
2	GND
3	+24V
4	+24V
5	GND
6	GND
7	GND
8	12VSW
9	12VSW
10	+5VSBY
11	+5VSBY
12	+5VSBY
13	POWER_EN
14	PG
15	VBR_OUT
16	BKLT_EN

Power Board

P802

Power: JWT/A2008WV0-16N	
1	SGND1
2	SGND1
3	24VAUD
4	24VAUD
5	SGND
6	SGND
7	SGND
8	12V
9	12V
10	5VSB
11	5VSB
12	5VSB
13	PS_ON
14	AC_DET
15	DIMMER
16	INVERTER

Comparison		
2, 4, 6, 8	+12V	48, 49, 50, 51
3, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27, 31, 33, 37, 38, 39, 40	NC	2, 3, 4, 5, 6, 26, 42, 43, 47
5, 1, 3, 9, 7	Control Pin	7, 8, 9, 10, 27
10, 11, 16, 22, 28, 29, 35	GND	1, 11, 18, 21, 34, 37, 44, 45, 46
12,14, 24, 26, 30, 32, 34, 36, 38, 40, 33, 31, 27, 25, 23, 21, 19, 17, 15, 13	LVDS Signal	12, 13, 14, 15, 16, 17, 22, 23, 24, 25, 28, 29, 30, 31, 32, 33, 38, 39, 40, 41
18, 20, 37, 39	CLK Signal	19, 20, 35, 36

P803

Inverter-14P	
1	24VINV
2	24VINV
3	24VINV
4	24VINV
5	24VINV
6	SGND
7	SGND
8	SGND
9	SGND
10	SGND
11	NC
12	INVERTER
13	DIMMER
14	NC

Panel Module

LVDS Port

42" LG LC420WUN FI-R51S-HF	
1	GND
2	NC
3	NC
4	NC
5	NC
6	NC
7	LVDS Select
8	VBR EXT
9	OPC OUT
10	OPC Enable
11	GND
12	R1AN
13	R1AP
14	R1BN
15	R1BP
16	R1CN
17	R1CP
18	GND
19	R1CLKN
20	R1CLKP
21	GDN
22	R1DN
23	R1DP
24	R1EN
25	R1EP
26	Reverserved
27	Bit Select
28	R2AN
29	R2AP
30	R2BN
31	R2BP
32	R2CN
33	R2CP
34	GND
35	R2CLKN
36	R2CLKP
37	GND
38	R2DN
39	R2DP
40	R2EN
41	R2EP
42	Reverserved
43	Reverserved
44	GND
45	GND
46	GND
47	NC
48	VLCD (+12V)
49	VLCD (+12V)
50	VLCD (+12V)
51	VLCD (+12V)

CN1

INVERTER-14P	
1	VDD (+24V)
2	VDD (+24V)
3	VDD (+24V)
4	VDD (+24V)
5	VDD (+24V)
6	GND
7	GND
8	GND
9	GND
10	GND
11	VBR-A
12	V ON/OFF
13	EXTVBR-B
14	Status

Trouble shooting

1. Fault clearance

Before calling your dealer or service center for assistance, check the matters below once again.

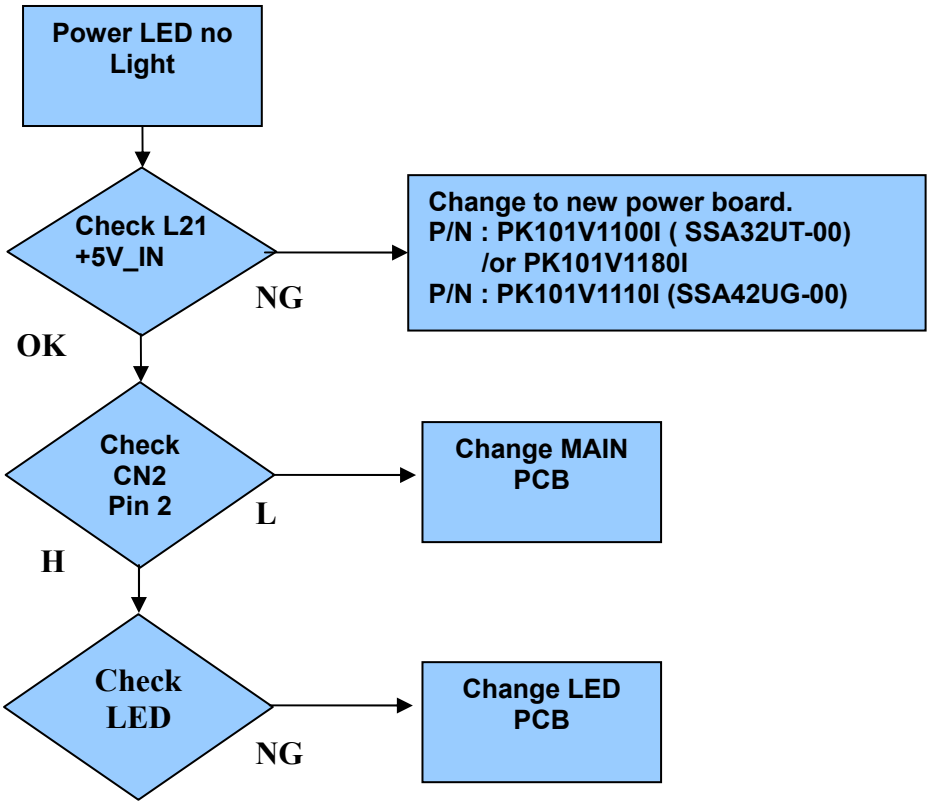
1. Make sure you have connected LCD TV to your equipment as described in the section "CONNECTING LCD TV".
2. Check cable connection. Verify that all external equipment and power cords are properly connected.
3. Verify that all power is switched on.
4. If LCD TV still does not produce an image, re-start the external equipment.
5. If the image still does not appear, unplug LCD TV from the external equipment and check the external equipment. The problem may be with your graphics controller rather than with LCD TV. (When you reconnect LCD TV, remember to turn the external equipment and TV off before you power up LCD TV. Power the equipment back on in order of LCD TV and external equipment.)
6. If the problem still exists, check the following chart.

Problem	Try these Solutions
NO POWER	• Plug the LCD TV into the AC outlet. • Press POWER button on SIDE Control or on Remote Control to turn on the LCD TV. • Check the POWER Indicator. If the indicator no light, it indicates the LCD TV has a problem.
Remote Control does not work	• Check the batteries. • Make sure nothing is obstructing the Remote Receiver and the Remote Control. • Make sure you are not too far from the LCD TV when using the Remote Control. • Maximum operating range is 16.4' (5m). • Is direct sunlight or strong artificial light shining on the LCD TV 's Infrared Remote Receiver? Eliminate the light source by closing curtains, pointing the light in a different direction, etc.
No image	• Check connections between external equipment and the LCD TV. • When turning the LCD TV on, it takes a few seconds to display the image. • Check the system that you select corresponds with the external equipment or the video equipment. • Make sure the temperature is not out of the operating temperature range (5°C ~ 35°C). • Turn off power, then turn on again, re-start the LCD TV.
No sound	• Check audio cable connection from audio input source. • Adjust the audio source. • Press VOLUME (+) button. • Press MUTE button.
There are tiny black points and/or bright points on the TV	• Dark or bright points of light (red, green, or blue) may appear on the screen. This is a characteristic of the LCD panel, not a malfunction of the LCD TV. • LCD panels are produced with very high accuracy technology. There is 99.99% or more dot pixel, but there is also 0.01 % or less of dot pixel lack or dot pixel that is constantly lighted. This is not a defect. • Regarding LCD panel characteristics, (look like a mirror) when the screen is changed if it displays same screen for a long time. Changing the picture or turn-off the power supply may recover. • Stripe pattern (more, interference stripes) may show up on the screen depend on the reflected picture.
Abnormal image colour	• Adjust colour settings. • Select a different colour system.

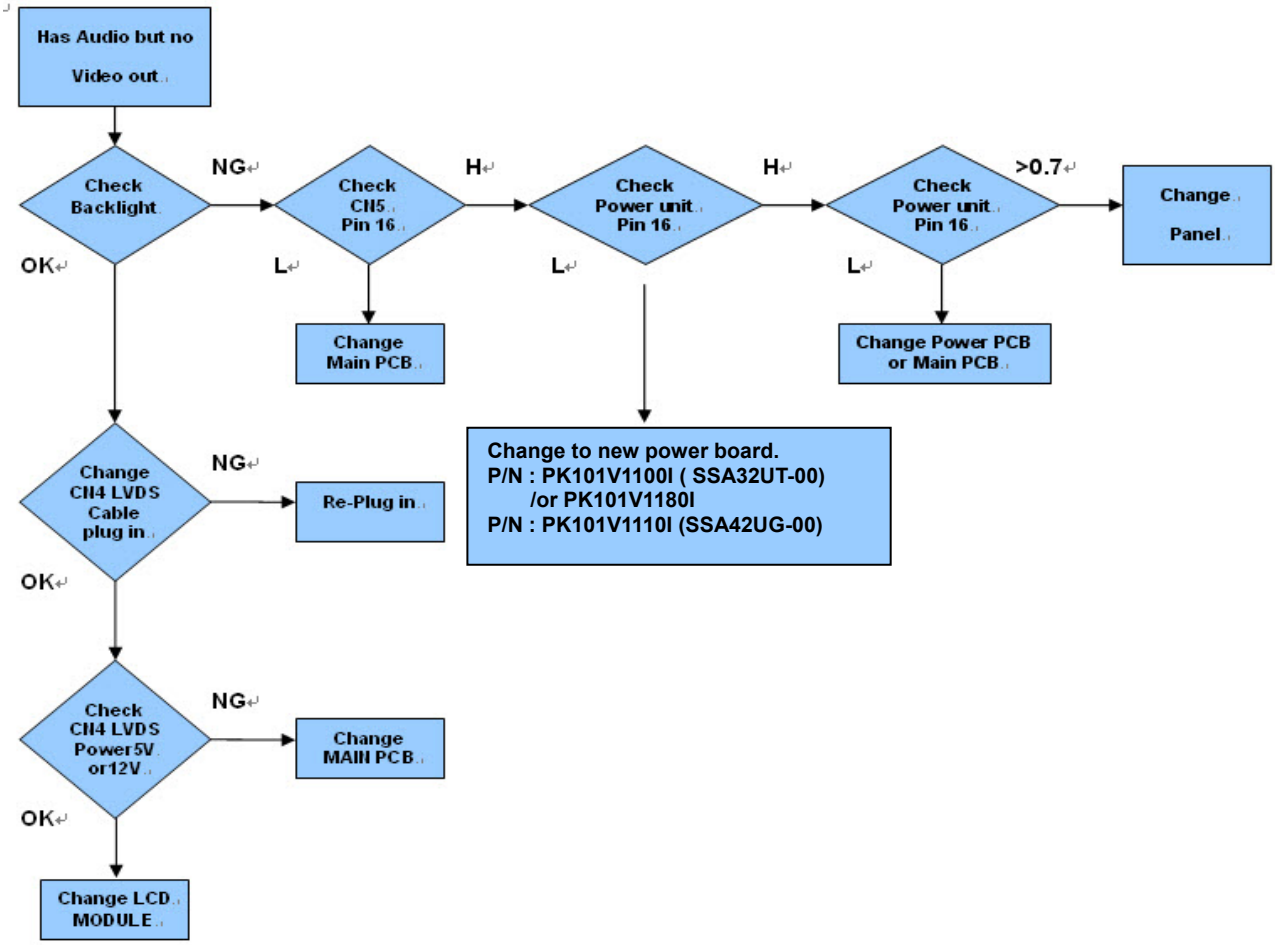
2. Troubleshooting guide

The flow chart shown below will help you to troubleshoot your Televison set with it doesn't display normally. Each procedure offers a simple way to check for system errors. Before starting, ensure that there is a signal in and that the Televison is turned on.

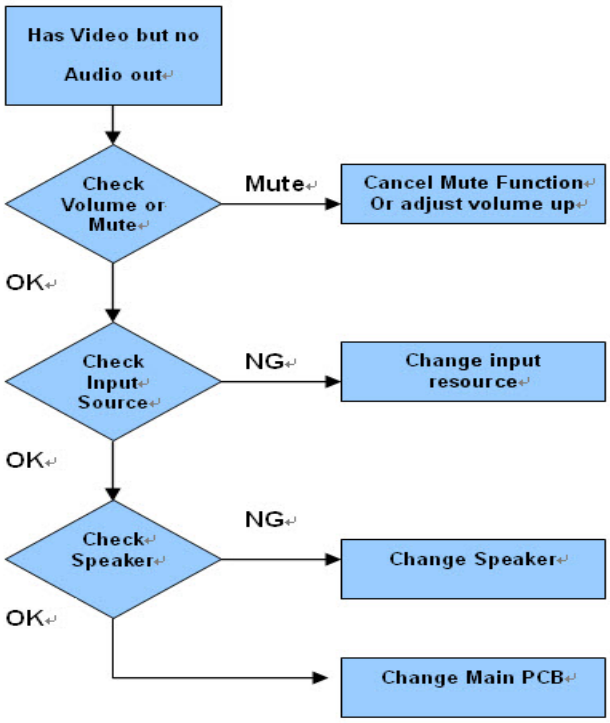
2-1 Power LED no light



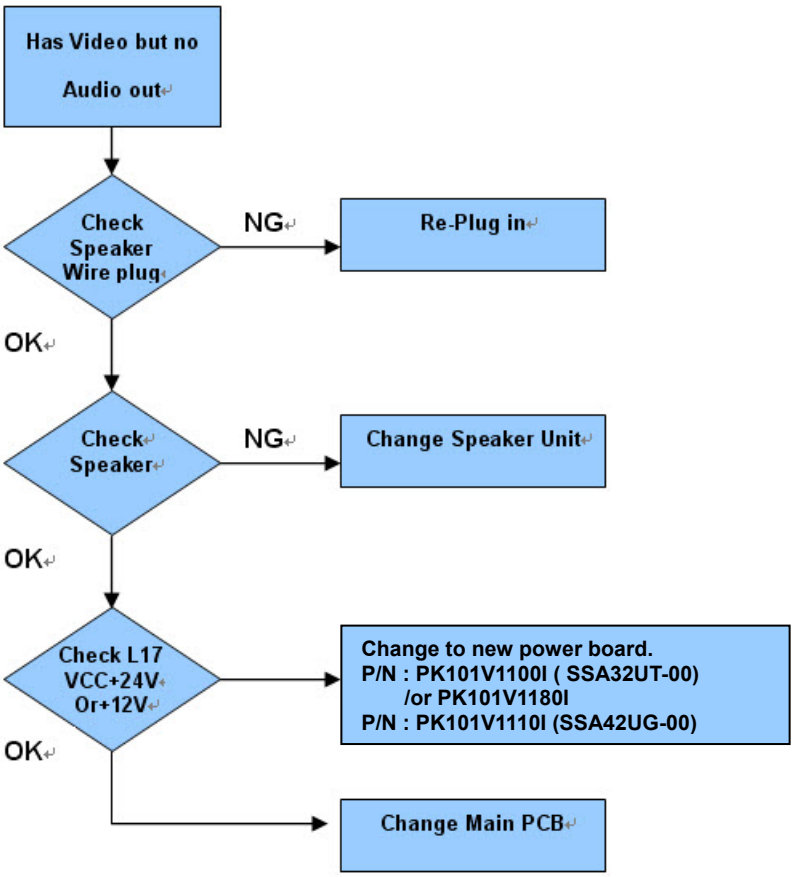
2-2 Has audio but no video out



2-3 Has video but no audio out step 1



2-4 Has video but no audio out step 2



SCHEMATIC DIAGRAM

ELECTRON-32"/42"

Note :

Compal Model	Sanyo Model	PCBA No.	Power Supply	Panel
SSA19UTA	LCD-19E30A	451C1730L32	453C0830L01 VTV-P1903	M185XW01(V0)-CC 18.5"A T /AU
SSA26UTA	LCD-26E30A	451C1730L12	PK101V1090I FSP123-4F01	T260XW02(VQ)-RR 26"A+ T /AU
SSA32UTA	LCD-32E30A	451C1730L22	PK101V1100I FSP138-4F01	T315XW02(VS)-RR 32"A+ T /AU
SSA42UGA	LCD-42E30A	451C1730L02	PK101V1110I FSP226-4F01	LC420WUN-SBA1 42"A G /LGS
SSA42UTA	LCD-42E30A	451C1730L02	PK101V1110I FSP226-4F01	T420HW04-V2

Input Terminal difference of Model

Item	Terminal	Location/Circuits	Model			
			SSA19U	SSA26U	SSA32U	SSA42U
1	HDMI1	JP401	○	○	○	○
2	HDMI2	JP402	×	○	○	○
3	HDMI3	JP403	×	×	○	○
4	Video1	JP301 (Composite/S-Video)	○	○	○	○
5	Video2	JP308 (Side I/O)	○	○	○	○
6	Video3	JP306A (Component)	○	○	○	○
7	Video O/P	JP306B (ATV O/P)	○	○	○	○
8	PC	JP305	○	○	○	○
9	PC Audio Input	JP307	○	○	○	○
10	RS232	JP309	○	○	○	○
11	Digital Audio Output	JP302	○	○	○	○
12	ANT	JP101	○	○	○	○
13	Headphone	JP701	○	○	○	○
14		U304 (Video filter Circuit)	×	×	×	○
15		JP201 (USB Terminal)	×	×	×	×
16		JP304 (SPDIF O/P Terminal)	×	×	×	×

COMPAL OPTOELECTRONICS CO., LTD

Title: SCHEMATIC, M/B VTV-L42008

Size: B | Document Number: 401C17 | Rev: 1A

Date: Tuesday, September 01, 2009 | Sheet 2 of 18

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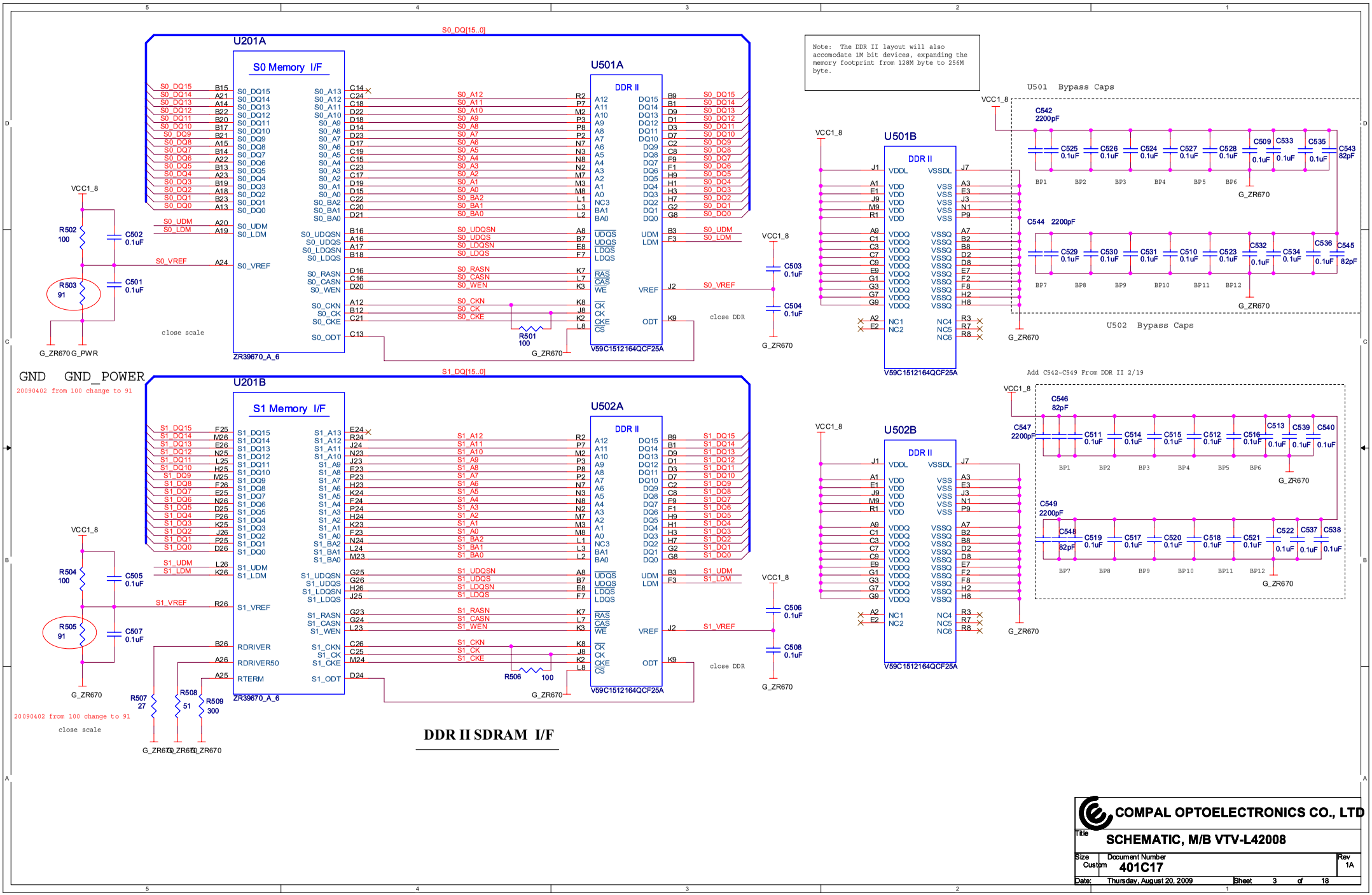

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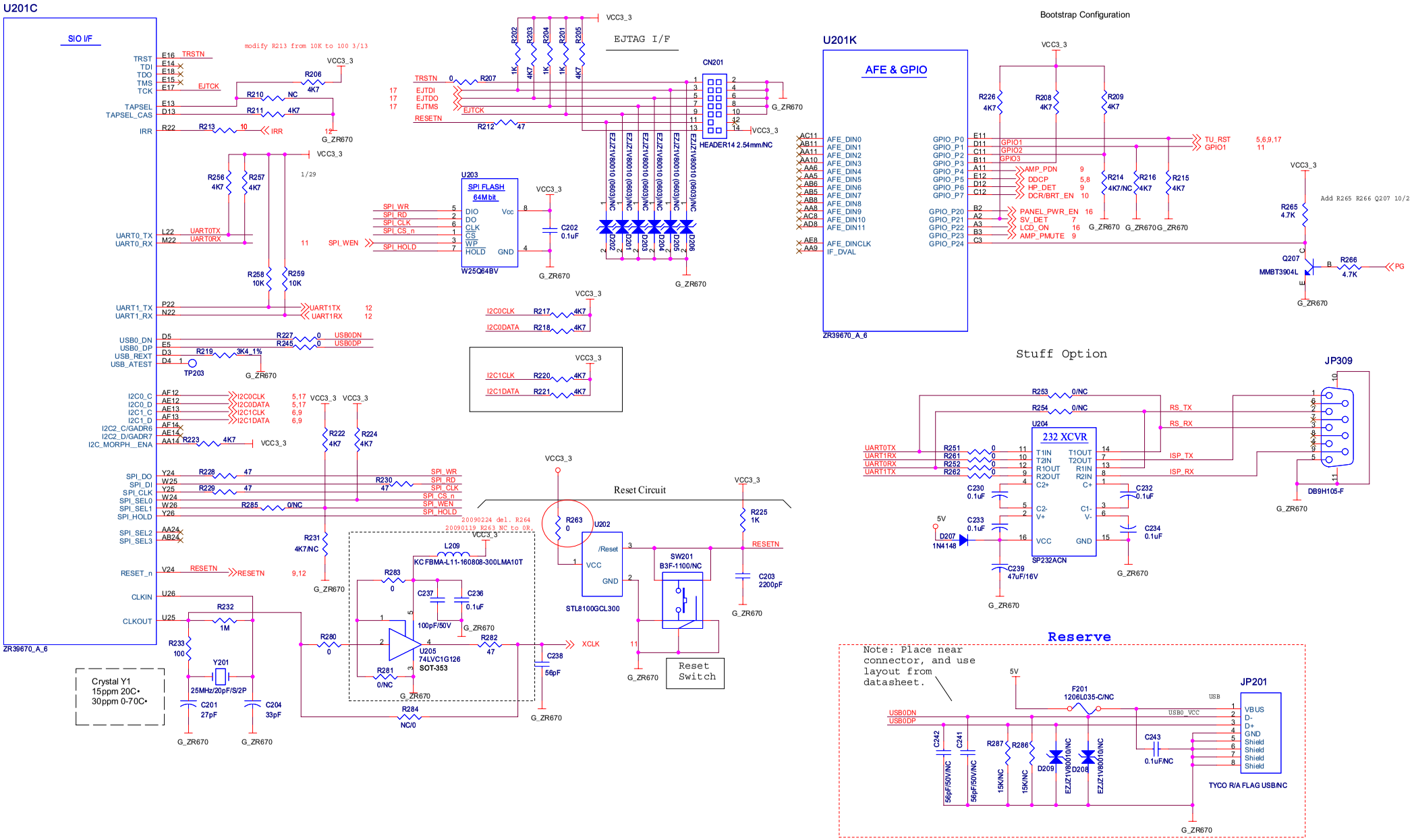

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Title	SCHEMATIC, M/B VTV-L42008
Size: Custom	Document Number: 401C17
Rev	1A
Date: Tuesday, September 01, 2009	Sheet 4 of 18

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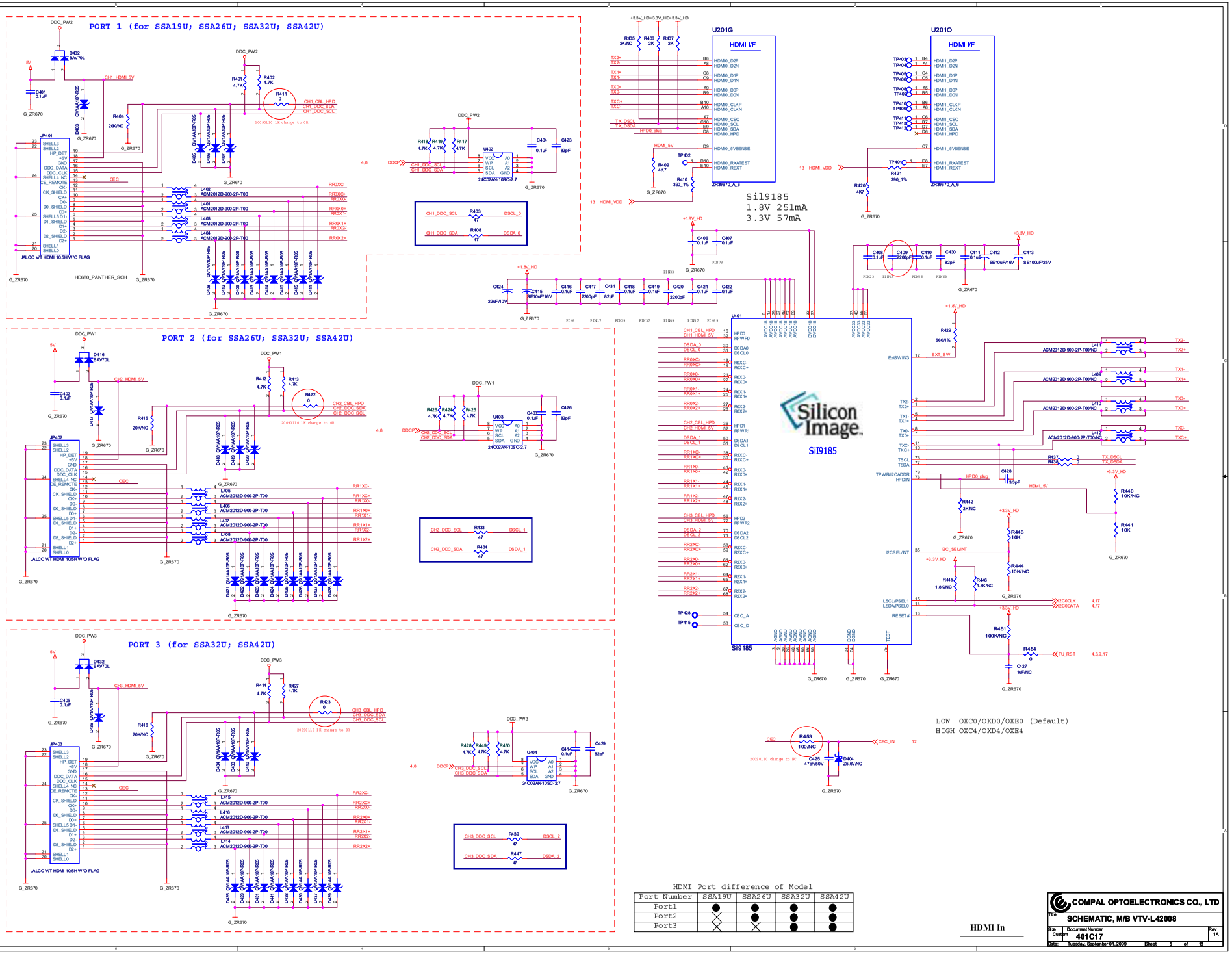

HDMI Port difference of Model

Port Number	SSA19U	SSA26U	SSA32U	SSA42U
Port1	●	●	●	●
Port2	⊗	●	●	●
Port3	⊗	⊗	●	●

HDMI In

COMPAL OPTOELECTRONICS CO., LTD

SCHEMATIC, M/B VTV-L42008

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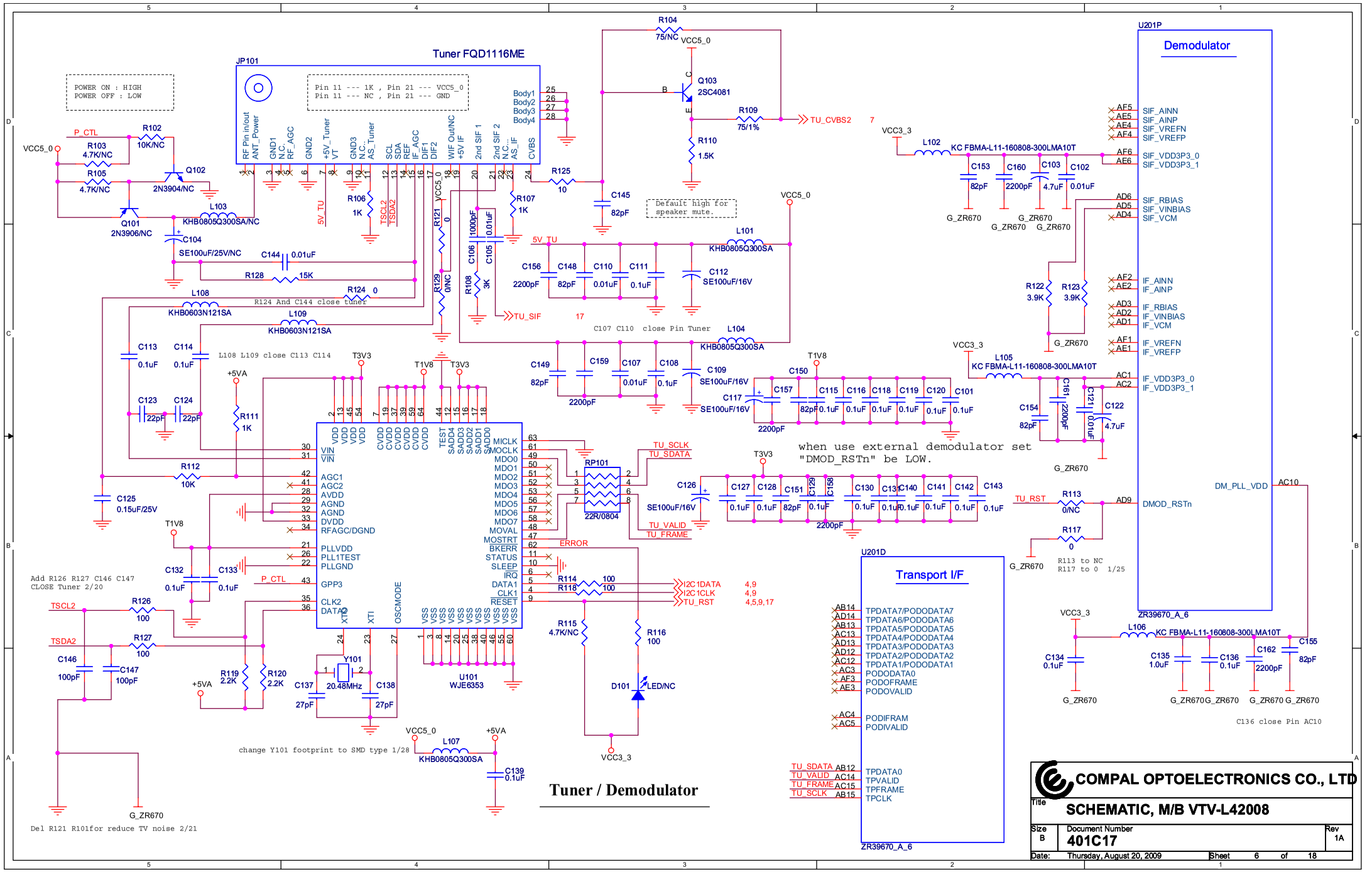

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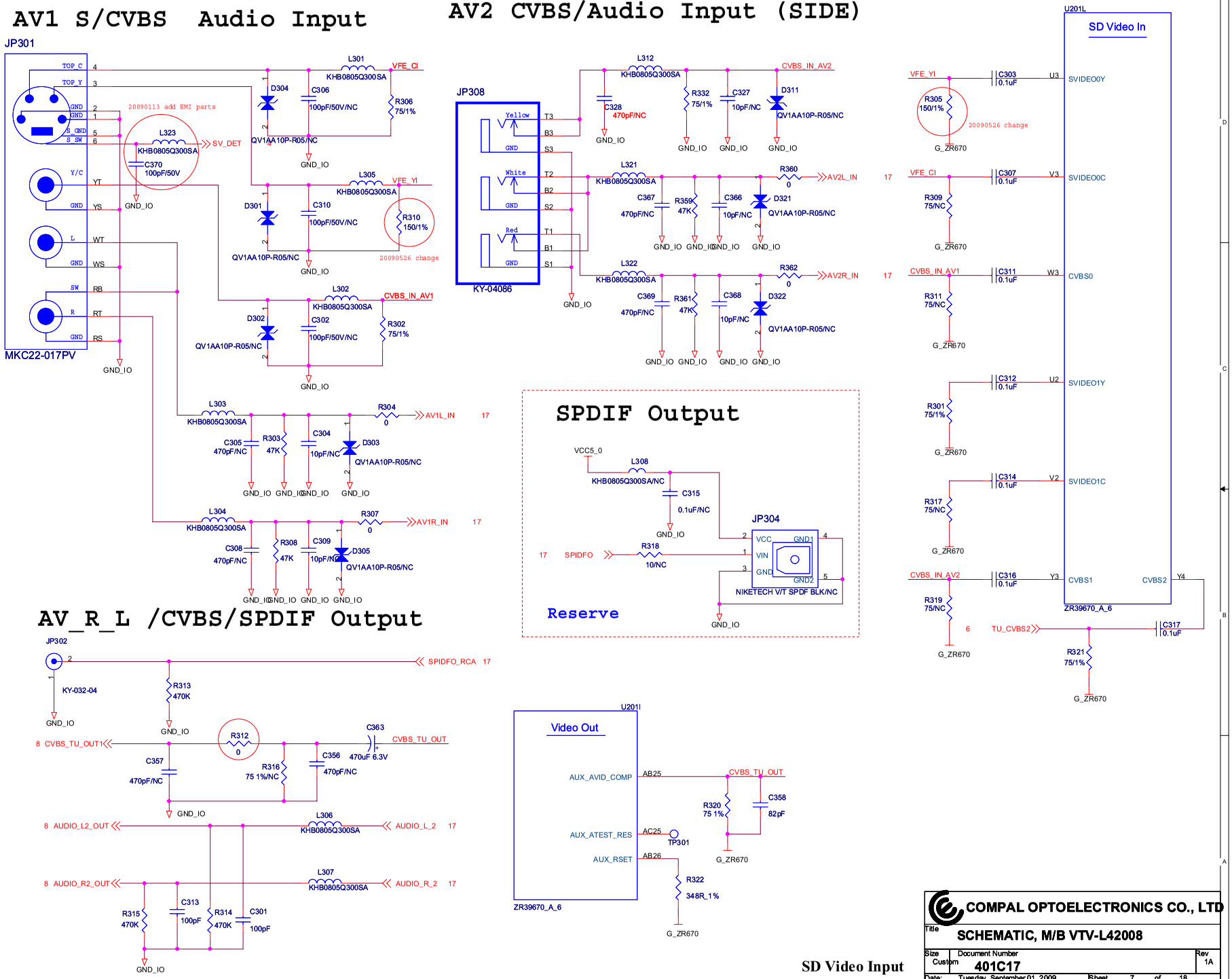

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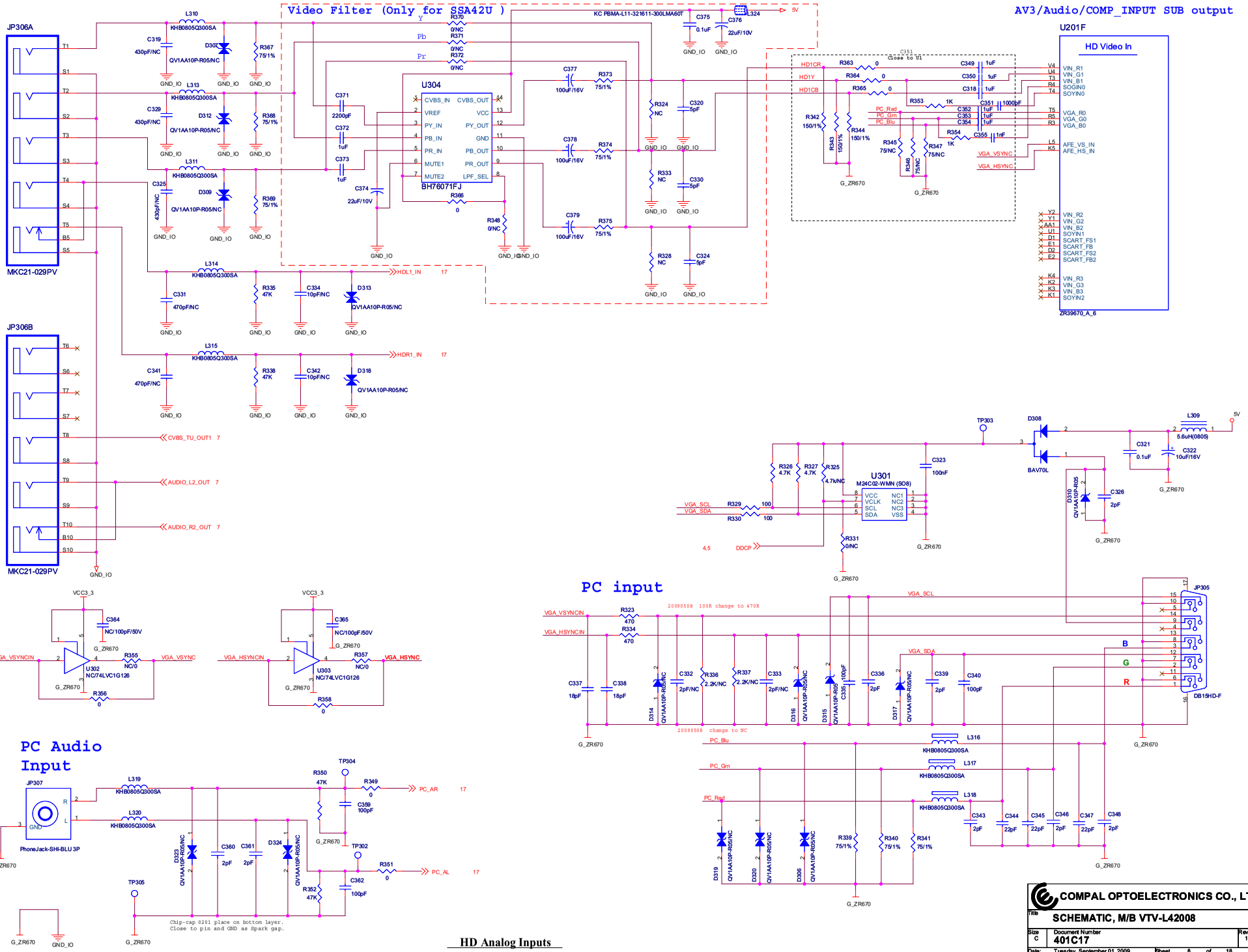

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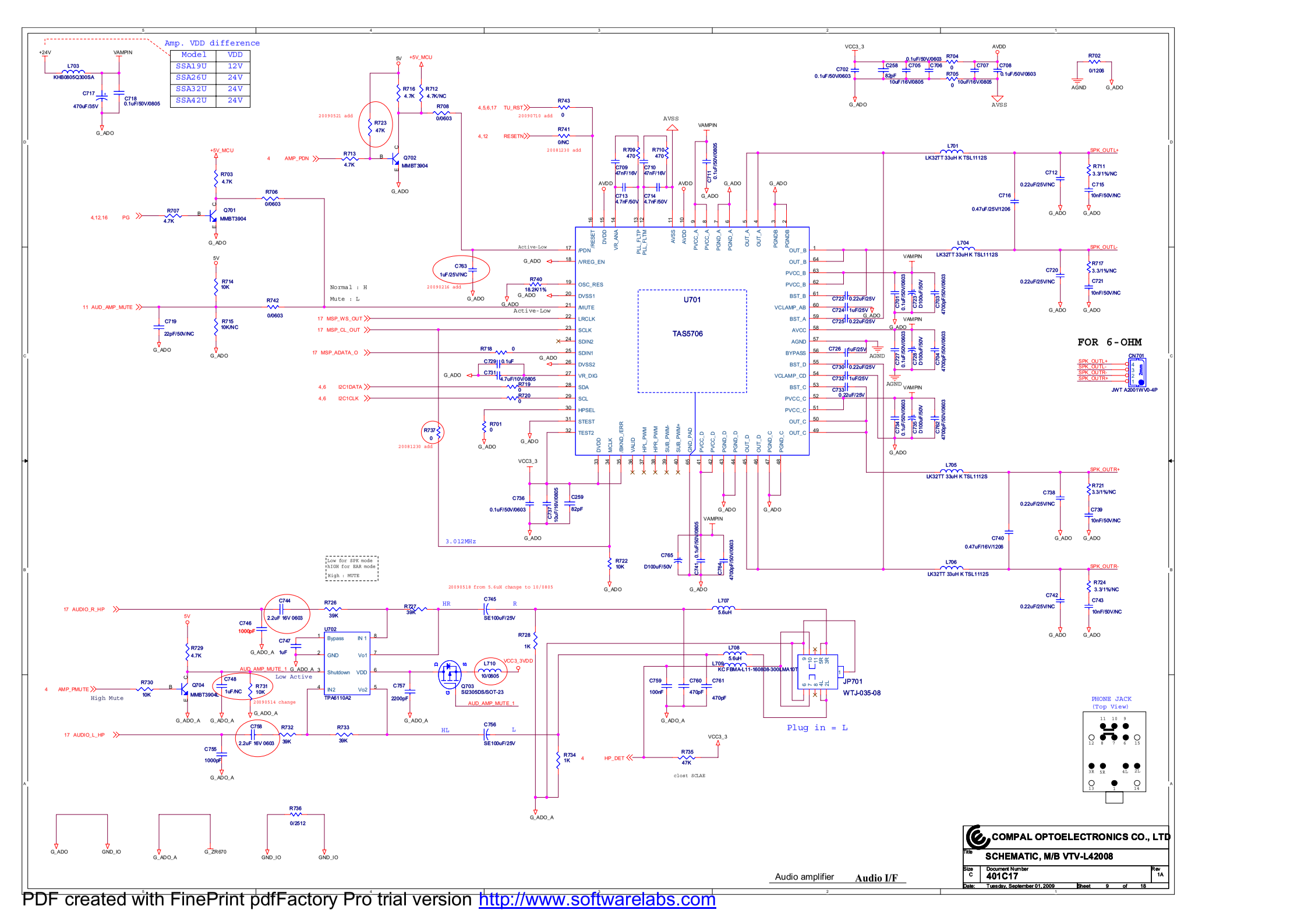

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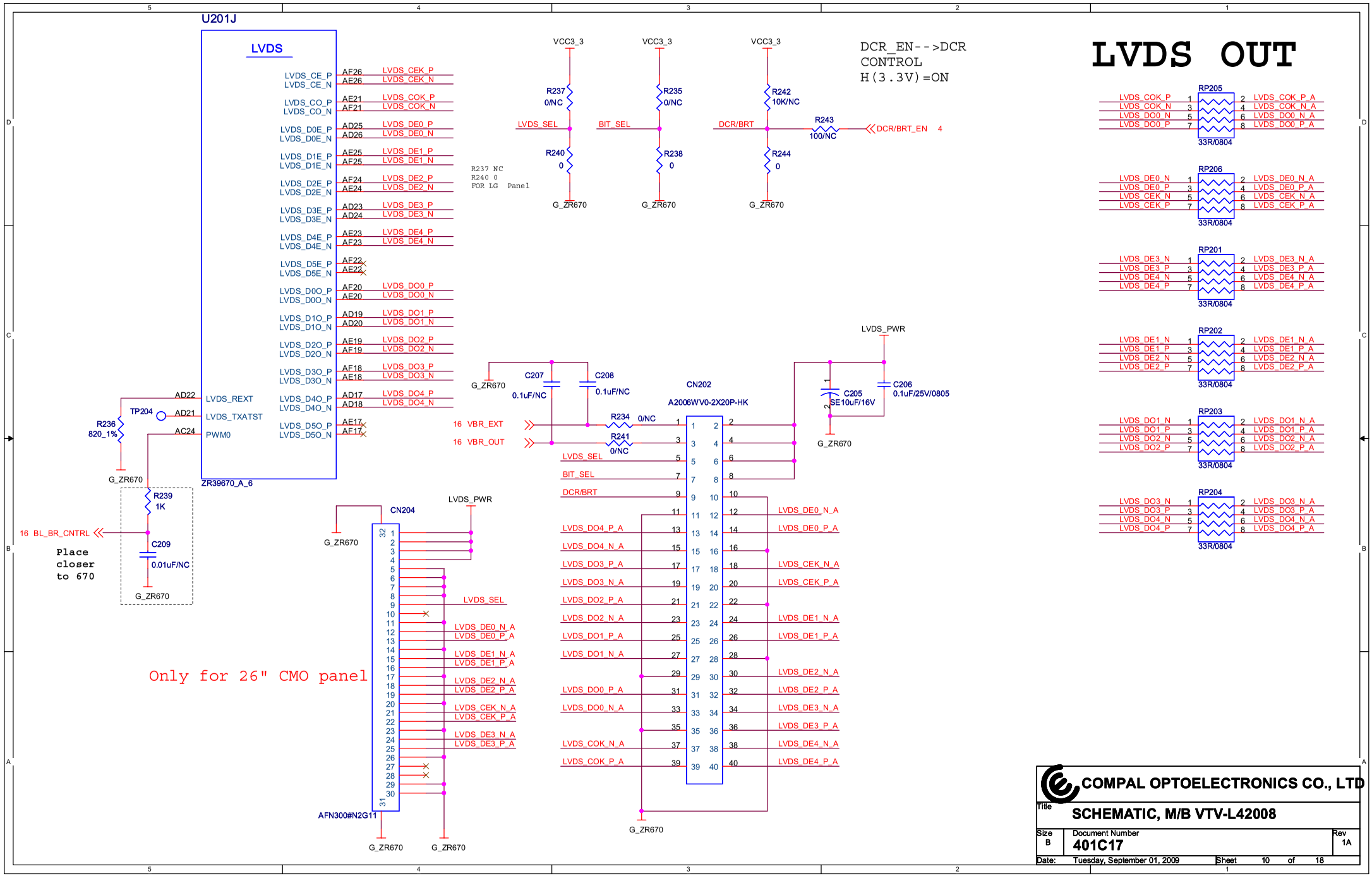

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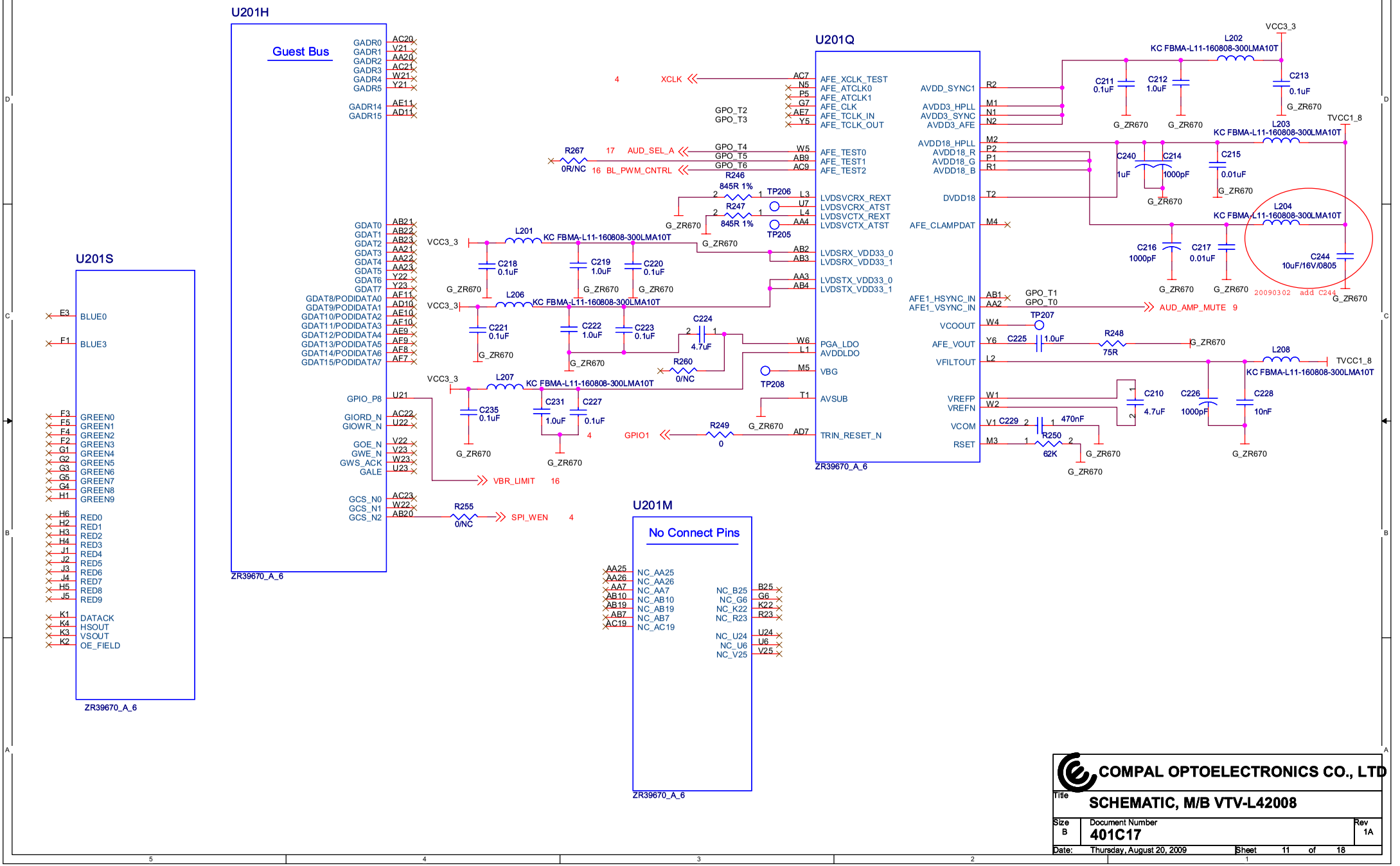

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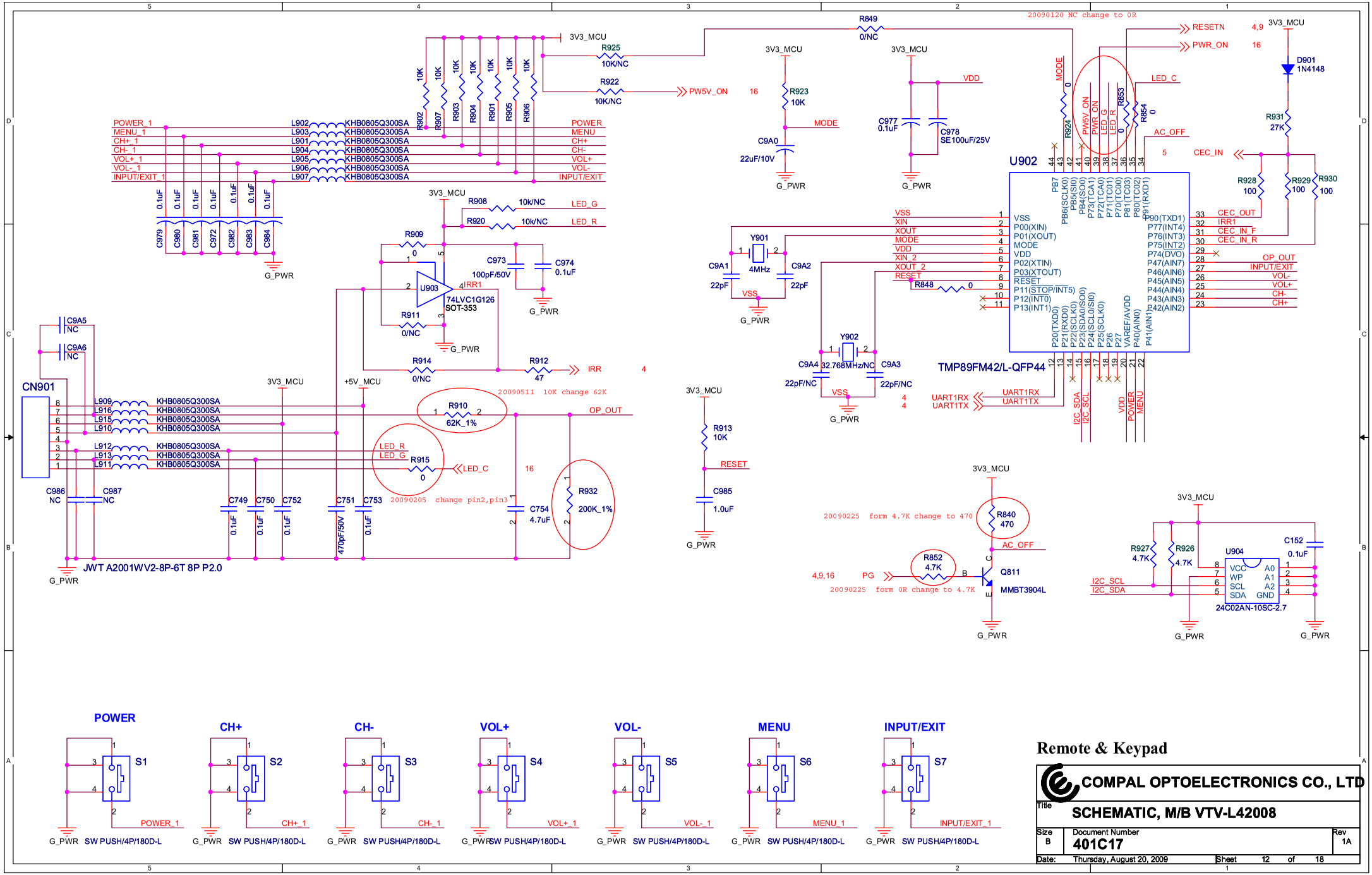

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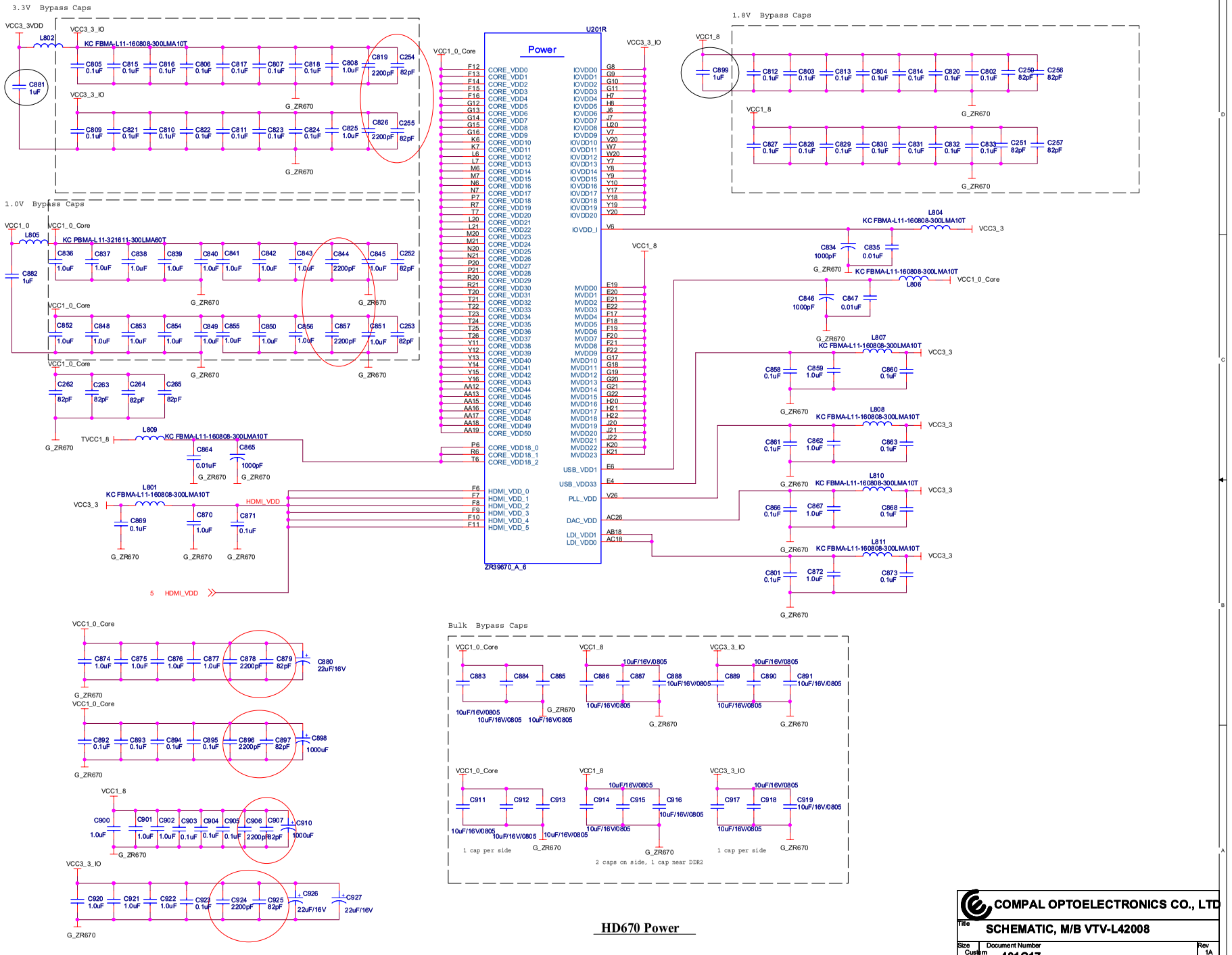

HD670 Power

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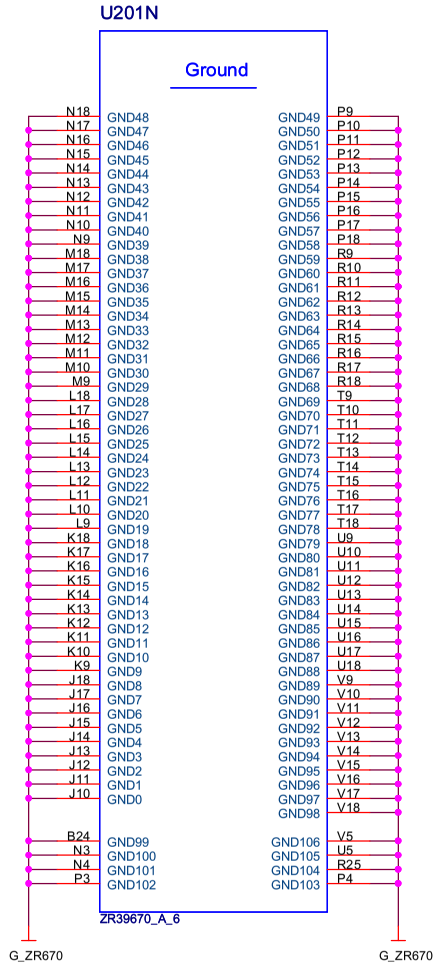

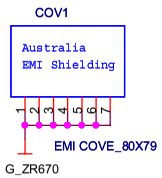

HD780 Ground

COMPAL OPTOELECTRONICS CO., LTD		
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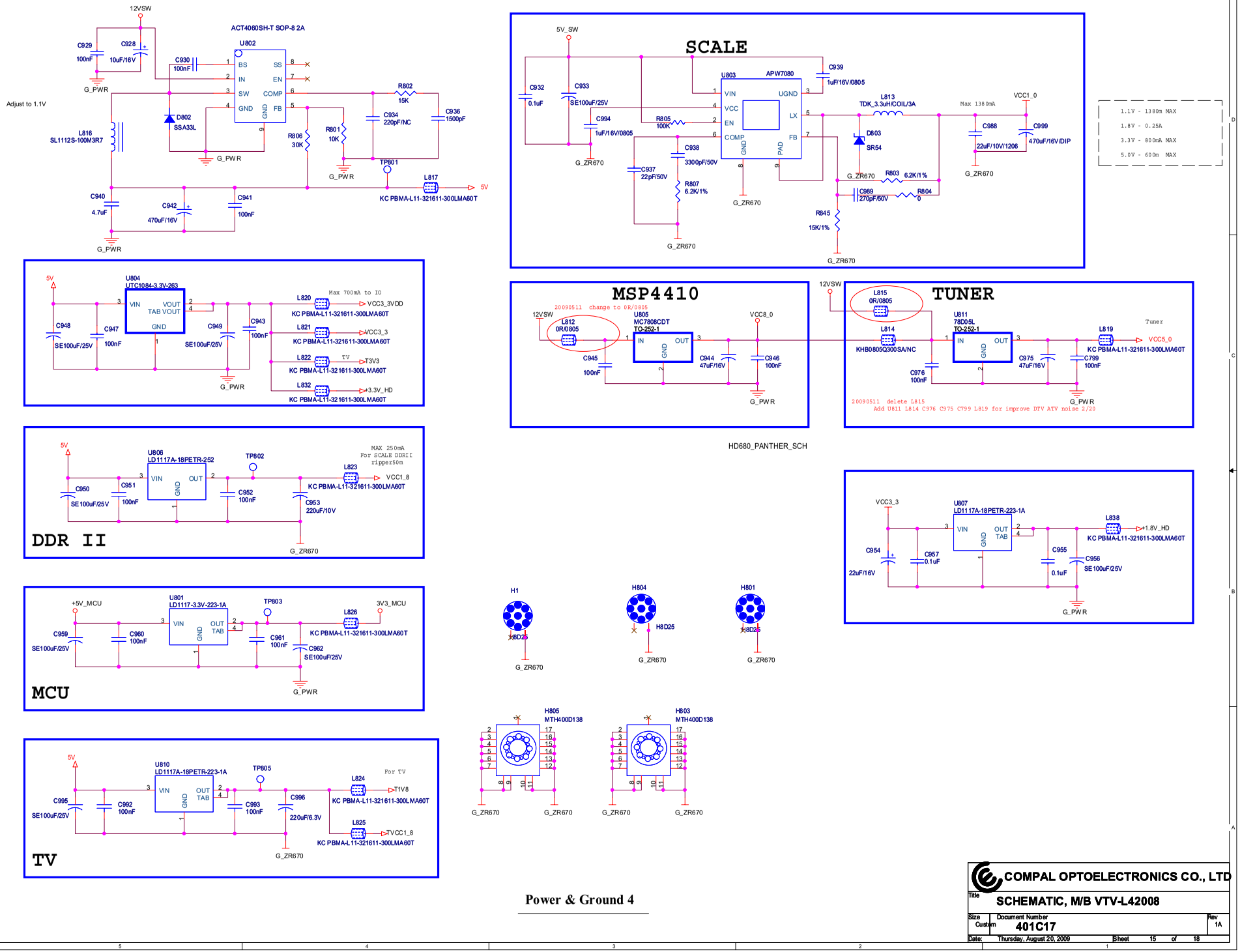

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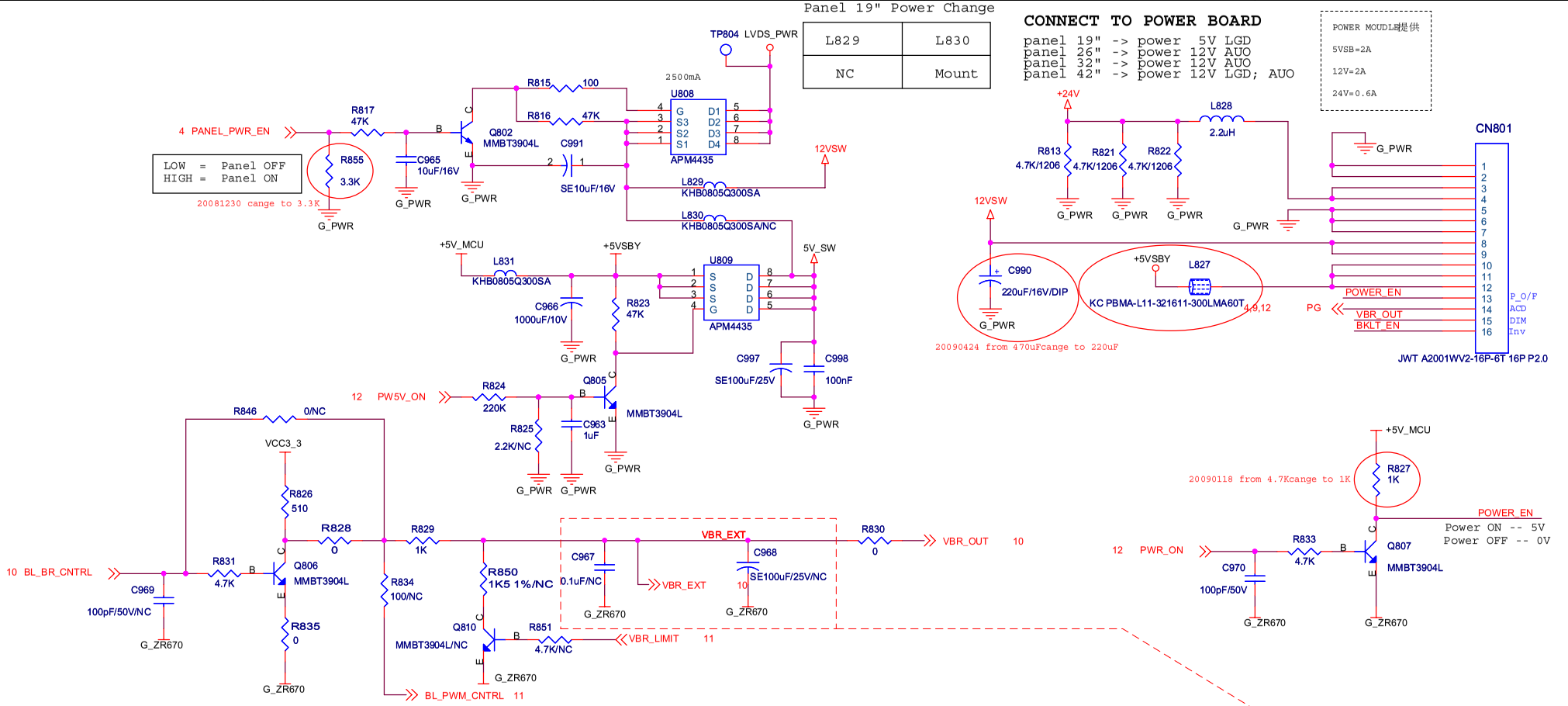
Panel 19" Power Change

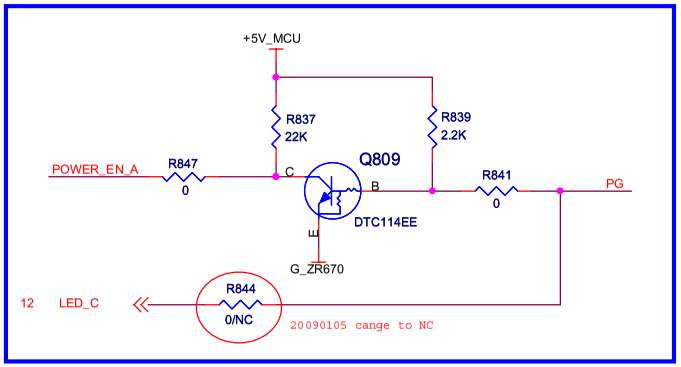
L829	L830
NC	Mount

CONNECT TO POWER BOARD

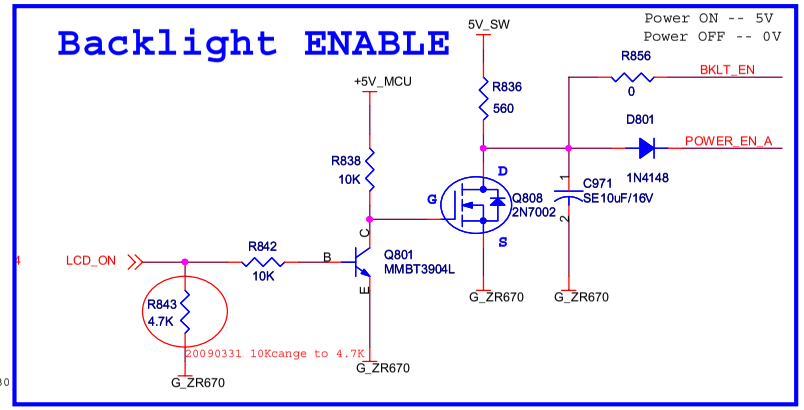
panel 19" -> power 5V LGD
panel 26" -> power 12V AUO
panel 32" -> power 12V AUO
panel 42" -> power 12V LGD; AUO

POWER MOUDLE提供
5VSB=2A
12V=2A
24V=0.6A





Modify R841 from NC to 0, R839 from NC to 2.2k 1/30
R837 from NC to 2.2K,Q809 from NC to DTC114EE



Panel Backlight DC & PWM control difference

Model	Control	C967(0.1UF)	C968(100UF)
SSA19UTA	PWM	NC	NC
SSA26UTA	PWM	NC	NC
SSA32UTA	PWM	NC	NC
SSA42UGA	PWM	NC	NC
SSA42UTA	DCV	Mount	Mount

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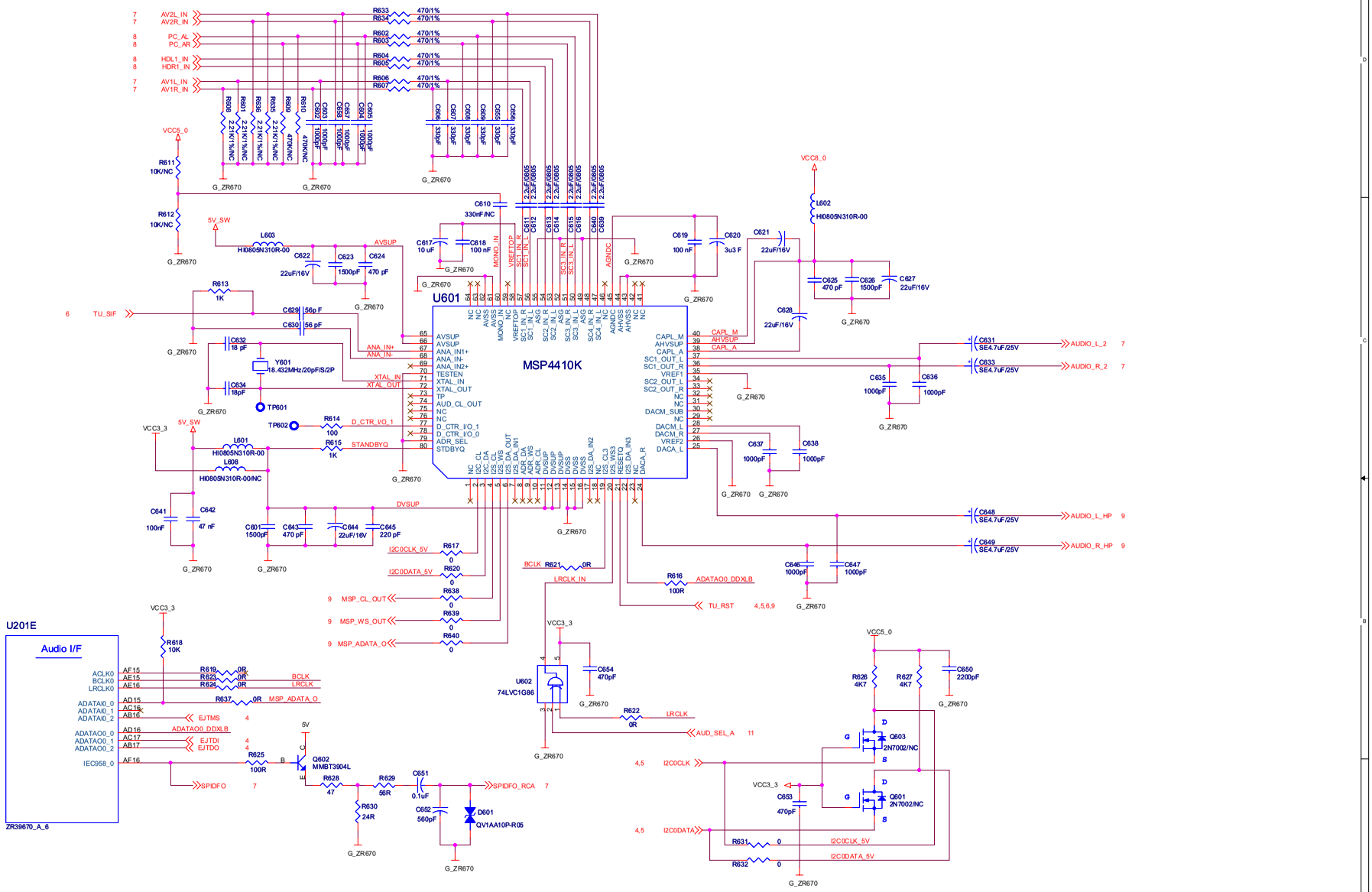

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GPIO Pin Table

Signal	ZR39670 GPIO #	Function	Note
TU_RST	P0	Tuner control	Active low
GPIO1	P1	Trin Reset	Active low
AMP_PDN	P4	Power Down Mute	Active low
DDCP	P5	Write Protect Pin	tied to Vcc --- Read only tied to GND --- Read/Write
LCD_ON	P22	LCD backlight on/off control	Active high
HP_DET	P6	Earphone insert detector	Active low
PG	P24		Active high
AMP_PMUTE	P23	Earphone Mute	Active high
BL_BR_CNTRL	PWM0	Back light control	PWM
VBR_LIMIT	P8	——— ———	——— ———
SV_DET	P21	S-Video detector	Active low
DCR/BRT_EN	P7	——— ———	——— ———
PANEL_PWR_EN	P20	Panel ON/OFF	Active high
AUD_AMP_MUTE	GPO_T0	Audio_amplifier mute	Active high
	GPO_T1	——— ———	——— ———
	GPO_T2	——— ———	——— ———
	GPO_T3	——— ———	——— ———
	GPO_T5	——— ———	——— ———
BL_PWM_CNTRL	GPO_T6	——— ———	——— ———
	MPS44XX		

GPOIs Table

Notes: (unless otherwise stated)

Components requirement for 1st PCB design 32W and 42W model

1 Ceramic Capacitor

Size mm(mil)	B Rank	F Rank
1005 (0402)	<= 0.1uF	<= 1uF
1608 (0603)	<= 1uF	<= 2.2uF
2125 (0805)	<= 4.7uF	<= 10uF

※<=§ means that ※less than or equal§

2 Aluminum Electrolytic Capacitor

6.3V	<= 1000uF
10V/16V	<= 470uF
25V	<= 330uF
35V	<= 220uF
50V	<= 100uF

3 Resisters

J rank(+/- 5%)	1005(0402) and 1608(0603)
F rank(+/- 1%)	1608(0603) only

4 Inductor
(1) For 1st PCB design Zoran choice
(2) For 2nd PCB design Discuss and exchange switch to Funai parts.

Note: TDK and TAIYO YUDEN are major inductor vender.
First priority TAIYO YUDEN: BK1608**, FBMH1608**

Notes: (unless otherwise stated)

1. All resistors are listed in ohms and are 5%, 1/16W, Metal Film (0603 form factor)
2. All capacitors are listed in microfarads, and are 10%, 25V, ceramic, X7R (0603 form factor)
3. All inductors are listed in microhenries, and are 5%, 100ma, non-wound (0805 form factor)
4. "Signal Ports" and "Off Page Connectors" are Global, and transition between sheets.
5. Signal "Names" without "Signal Ports" or "Off Page Connectors" are Local, and only connect like named signals on the same sheet.

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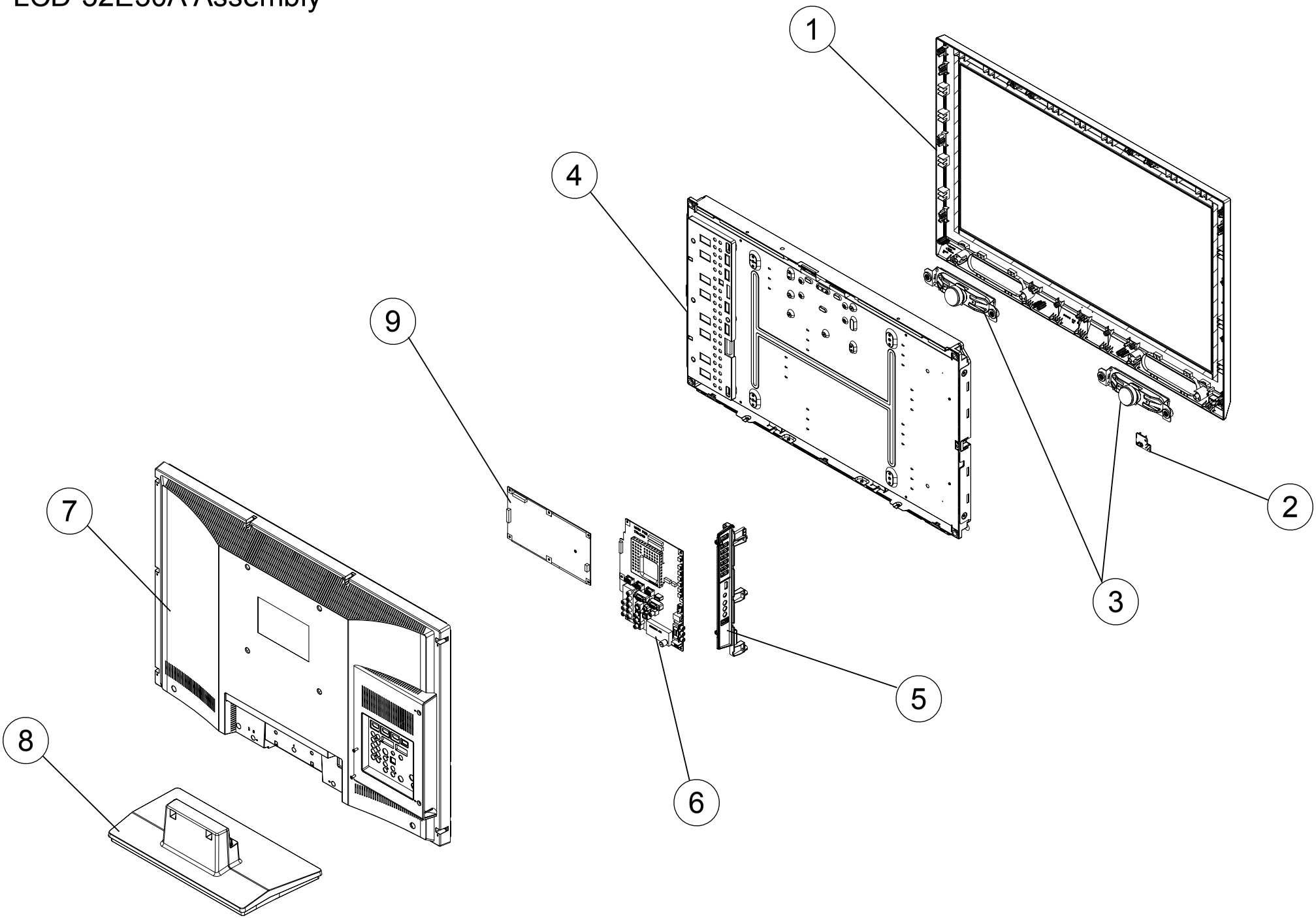
APPENDIX-A: Main assembly

LCD-32E30A **Version:01**

REF.No.	PARTS No.	DESCRIPTION	Q'TY	REMARK
1	CLAPSA320100I	FRONT CABINET	1	
2	CL454C0S30L01	IR PCB ASS'Y	1	
3	CLCG10102V54I	SPK SET (SSA32/42I)	2	
4	CLAC6VT3200R1	LCD MODU	1	T315XW02(VS)-RR 32"A+ T
	CLAC6VT3200R2			
5	CLFBTA322100I	KEY PLATE PCB ASS'Y	1	
6	CL461C1730L22	MAIN PCB ASS'Y	1	
7	CLAPSA320800I	BACK COVER ASSY	1	
8	CLAPSA320400I	BASE ASSY GLOSSY	1	
9	CLPK101V1100I	POWER PCB ASS'Y	1	
	CLPK101V1180I (2^{nd} source)			
10	CLPK11V01160I	REMOTE CTRL	1	
11	CLHDJKTA3220I	USER'S MANUAL	1	
12	CLFJSA321A00I	EPS FORM(TOP LIFT)	1	
13	CLFJSA321B00I	EPS FORM(TOP RIGHT)	1	
14	CLFJSA321C00I	EPS FORM(BOTTTOM LIFT)	1	
15	CLFJSA321D00I	EPS FORM(BOTTOM RIGHT)	1	
16	CLHK1LV32D12I	EPE BAG for unit	1	
17	CLHB4SA32000I	CARTON	1	
18	CLHK3OL77801I	ZIPPERED BAG for accessories	1	
19	CLHK3TW26000I	PE BAG-STAND	1	
20	CLGA06004020I	AC POWER CODE	1	

LCD-32E30A Assembly

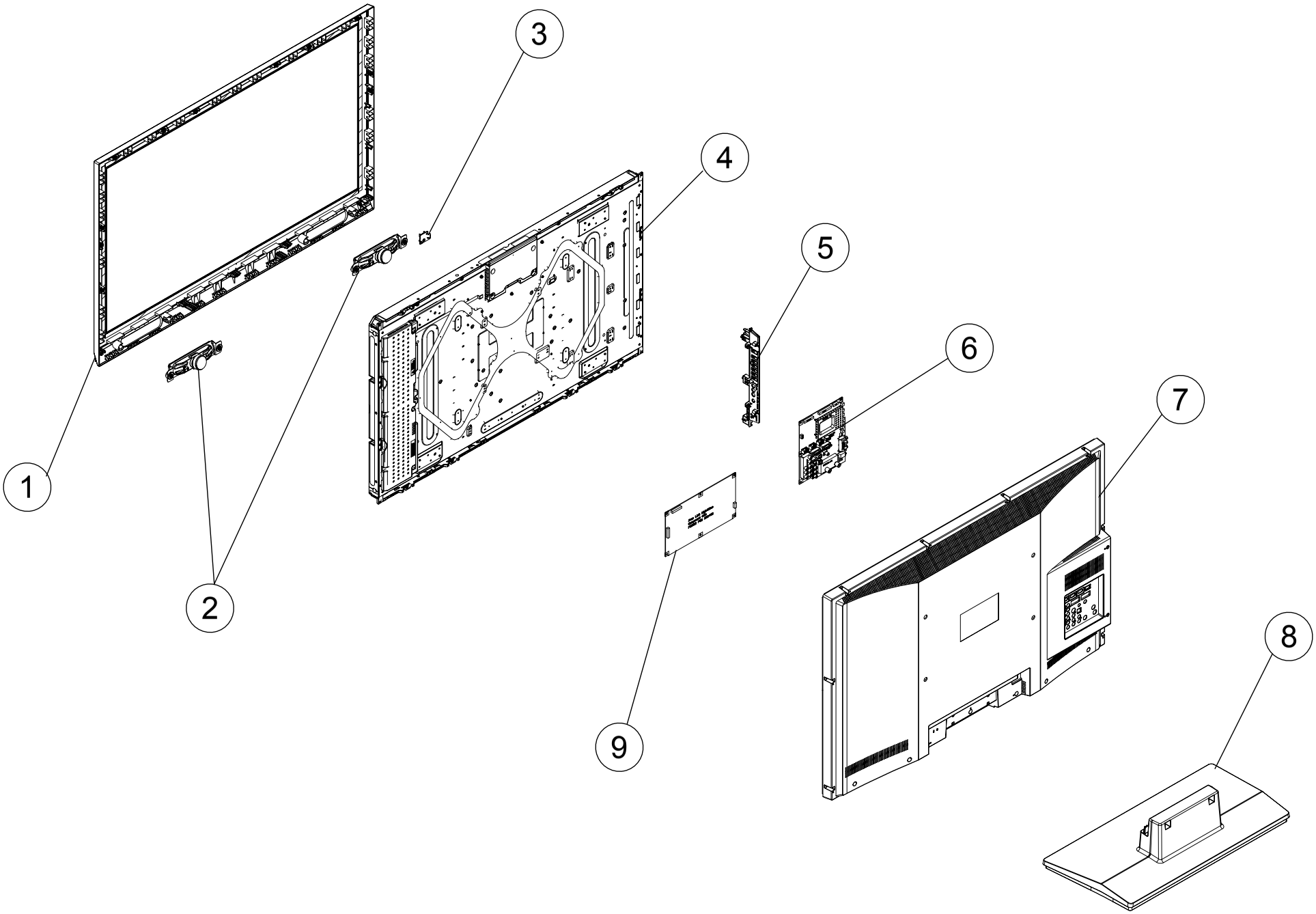


APPENDIX-A: Main assembly

LCD-42E30FA **Version:01**

REF.No.	PARTS No.	DESCRIPTION	Q'TY	REMARK
1	CLAPSA420400I	FRONT CABINET	1	
2	CLCG10102V54I	SPK SET (SSA32/42I)	2	
3	CL454C0S30L01	IR PCB ASS'Y	1	
4	CLAC6VT4203R1	LCD MODU	1	T420HW04(V2)-BR 42" A+T
5	CLFBTA322100I	KEY PLATE PCB ASS'Y	1	
6	CL461C1730L02	MAIN PCB ASS'Y	1	
7	CLAPSA420B00I	BACK COVER ASSY	1	
8	CLAPSA420500I	BASE ASSY GLOSSY	1	
9	CLPK101V1110I	POWER PCB ASS'Y	1	
10	CLPK11V01160I	REMOTE CTRL	1	
11	CLHDJKTA4240I	USER'S MANUAL	1	
12	CLFJSA420700I	EPS FORM(TOP LIFT)	1	
13	CLFJSA420800I	EPS FORM(TOP RIGHT)	1	
14	CLFJSA420900I	EPS FORM(BOTTTOM LIFT)	1	
15	CLFJSA420A00I	EPS FORM(BOTTOM RIGHT)	1	
16	CLHK1SA42001I	EPE BAG for unit	1	
17	CLHB4SA42000I	CARTON	1	
18	CLHK3OL77801I	ZIPPERED BAG for accessories	1	
19	CLHK3TW37000I	PE BAG-STAND	1	
20	CLGA06004020I	AC POWER CODE	1	

LCD-42E30FA Assembly



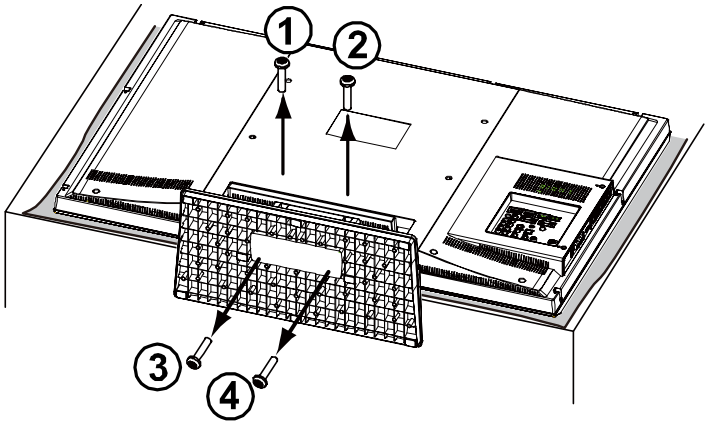
Removing or Installing the Stand

Cautions:

1. **Carefully handle the unit during setup and consult authorized service personnel to ensure successful installation.**
2. **Before performing work spread cushioning over the base area to lay the Display on. This will prevent it from being damaged.**
3. **Disconnect the AC power cord firstly.**

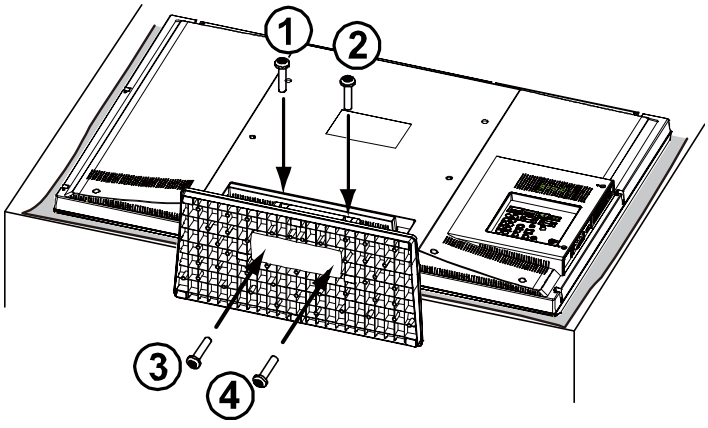
To remove the stand: (if will mounting)

1. Place the LCD TV screen facing down on a flat surface place where maintained with soft materials (such as a blanket) for protecting the display screen.
2. Release screw in 4 holes with screw driver.



To install the stand

1. Place the LCD TV screen facing down on a flat surface place where maintained with soft materials (such as a blanket) for protecting the display screen.
2. Secure the stand to the TV with 4 screw.



Note

- **Do not remove the stand from the TV unless using an optional bracket to mount it.**
- **The appearance of the unit may differ from the actual one.**

AU SERVICE MANUAL CHANGE LIST

DATE	Page	VERSION	CHANGE ITEM
24 /June 2009	Page 53	01	Add power code on APPENDIX-A of each models.
26/ August 2009	Page 1	02	Change to CHASSIS NO. : SSA42UT-00
	Page 76	02	APPENDIX-A: Main assembly (LCD-42E30FA) Ref. No. : item : 1, 4, 5 ,10
04/ September 2009	Page 12	02	Add function sentence page after page 11 (AC POWER MODE, MUSIC MODE SETUP, RESET, BAUD RATE.).
	Page 19-20	02	Add the 42” model after 32” on the Block Diagram Chapter
	Page 33-50	02	Update and combined the schematic diagram electron-32"/42”. (Delete from page 50 to 67)